Sassanian and Islamic Pottery from Ras al-Khaimah

Classification, chronology and analysis of trade in the Western Indian Ocean

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with a contribution by
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Chapter 1: Introduction

During the course of a preliminary surface survey of the island of Hulaylah in Ras al-Khaimah, United Arab Emirates in 1991 (Kennet 1994) it became clear that, although our understanding of the ceramic sequence from the Bronze Age until about the 4th century AD in the northern Emirates was fairly good, very little was known about the sequence from the later Sasanian period until the present day, with the exception of Hansman's work at Julfar - which covers the only 14th to 16th centuries (Hansman 1985). As the majority of pottery collected by field surveys is datable to this period, this lacuna was a severe impediment to the dating of sites found by field survey and thereby to a better understanding of settlement patterns and landscape development. Since that time, through the study of two excavated assemblages and numerous surface survey collections, a much better understanding of the later ceramic sequence has begun to emerge. Although much still remains to be done, especially for the period after 1600 AD, it was felt that the publication of the present state of knowledge would assist those conducting fieldwork in the northern Emirates and surrounding regions. It is also hoped that by presenting the classification system and the related chronology that has been developed so far, however imprecise it might be in some places, the results of other fieldwork in the region might be able to contribute to a further improvement of the classification and chronology as well as a better understanding of distributions and regional patterns in ceramic usage.

The principal aim of this book is therefore to present the classification of Sasanian and Islamic ceramics from the 4th/5th century AD to about the 20th century AD from Ras al-Khaimah as well as the evidence for a proposed chronology (Chapters 2, 3 and 5). The classification is based on a study of over 124,000 sherds, which includes excavated sequences from the sites of Kush and al-Mataf and numerous surface collections made in and around Ras al-Khaimah. Although reference is made to other published material from the region, on the whole the approach was to allow the Ras al-Khaimah ceramic sequence to 'speak for itself' before relating it to studies from other areas where chronologies and distributions may be significantly different. Chapter 5 proposes a new and more precise chronology and periodisation of Sasanian and Islamic ceramics from the Gulf for use in the dating of survey assemblages.

The secondary aim of the book (Chapter 4) is to present a preliminary analysis of the combined quantified sequences from Kush and al-Mataf and to explore some of the results, especially those that have a bearing on the archaeology of Indian Ocean trade and economy. In doing this comparisons are made with the quantified sequence from Shanga on the East African coast in order to identify trends and developments that are relevant to the Arabian Sea littoral as a whole, as well as to Ras al-Khaimah. This aspect of the work is far from complete and is currently being developed into a fuller study of patterns of trade in the western Indian Ocean based on ceramic distributions and quantified assemblages. This will appear as part of the final publications of the two excavations and as individual research papers. In the meantime it was thought that a rapid and detailed dissemination of the basic data and some preliminary analysis may be of use to others working in the field and may stimulate research and open up new lines of enquiry.

Ras al-Khaimah (**Fig. 1**) is located in an excellent position from which to study the development of trade in the western Indian Ocean. It lies at the very entrance to the Gulf and has participated in most of the key cultural developments in Eastern Arabia from the Ubaid period onwards, as well as having had close links to southern Iran and to wider developments in the Arabian Sea throughout its history. The ceramic sequence presented in this book shows that Ras al-Khaimah was very much a part of the widening Indian Ocean economy throughout the Sasanian period, when relatively high percentages of Indian ceramics are found at Kush, and the Islamic period, during which time Chinese and other Far Eastern ceramics form an increasingly significant part of local ceramic assemblages. For this reason the Gulf is considered, throughout this work, to be part of the Indian Ocean world. Where the term 'Western Indian Ocean' is used it refers to the Arabian Sea, the Gulf, the Red Sea, the western coast of South Asia and the East African coast.

In terms of the identification and dating of ceramics, this study is specifically relevant to the Oman Peninsula, Eastern Arabia, and coastal Southern Iran but some aspects will also be of relevance to the whole of the Western Indian Ocean - although there is much in this wider area that is not covered in this study. In the northern part of the Oman Peninsula this study builds on a well established - though not always widely disseminated - ceramic chronology that extends from the Bronze Age to the 4th century AD (e.g. Frifelt 1991: 40-99. Magee 1996. Magee *et al.* 1998: 236-245. Mery 2000. Mouton 1992. Potts 1990i 102-6, 244-9, 375-80.Velde 1992. etc). The excavated sequences from Kush and al-Mataf, which form the basis of the relative chronology of this study, are briefly described in Chapter 2. Together they extend from the 4th/5th to the later 16th century. For the period after this no excavated sequence is available and the classification and relative chronology of this period is therefore based on surface collections and sporadic finds and is not so comprehensive.

A basic users' guide is provided in Appendix 4 to facilitate the identification of pottery in the field.

Conventions

Throughout this study reference is made to 106 pottery classes which are described and discussed in Chapter 3. Each class has been allocated a unique code which is written in uppercase in the text e.g. CBW, TURQ, COBALT, JULFAR, LISV, SMAG etc. An index of these codes is provided in Table 14 in Chapter 3.

All dates are *Anno Domini* (AD) unless otherwise stated.

The transliteration of Arabic and Persian words follows the system used in the Encyclopaedia of Islam with the usual changes, thus "q" instead of "k", "j" instead of "dj", and "sh" and "kh" instead of "sh"and "kh" etc. The definite article of names has normally been omitted. Common place names, e.g. Bahrain, Iraq, and the names of the Emirates of the U.A.E. have been spelt according to normal English usage. For ease of reference, the names of archaeological sites are normally given as spelt by their excavators, even when this is formally incorrect. If there is variation in this spelling then the correct transliteration has been used where it is known (e.g. al-Dūr for ed-Dur, al-Dour). In some cases the correct transliteration of place names mentioned in the secondary literature is unclear, in these cases the given spelling has been followed.

The following words occur frequently in the text. The correct transliterations are given here and diacriticals are otherwise omitted throughout:

Abbasid	^{c}Abbāsid	al-Mataf	al-Maṭāf
al-Hasa	al-Ḥasā	Samarra	Sāmarrā'
Hulaylah	Ḥulaylah	Siraf	Sīrāf
Julfar	Julfār	Suhar	Ṣuḥār
Kush	Kūsh		

Diacriticals have also normally been omitted from figures, tables, and titles.

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Chapter 2: The Contexts

This study is based on an analysis of over 124,000 sherds of pottery from excavations and surface collections that have been made in Ras al-Khaimah over the past 10 years. There are two excavated assemblages: the first comes from the British excavations at al-Mataf (Julfar) excavated by G.R.D. King between 1989 and 1992 (Kennet 2003: 111-114). The second comes from the present author's own excavations at the site of Kush between 1994 and 2001 (Kennet 1997). In addition the study includes assemblages of surface material from a campaign of field survey conducted by the present author in early 1994 (Kennet 2002a), from the Khatt survey (de Cardi *et al.* 1992), the Hulaylah survey (Kennet 1994), and an as-yet unpublished survey of the mountain villages of the Musandam area, as well as material inspected from various sites and localities in Ras al-Khaimah (Table 1).

The study has also been informed by the ongoing study of the Williamson Collection from Southern Iran (Priestman & Kennet 2002) and inspection of material from Barbar and Qala[c]at al-Bahrain (Frifelt 2001) in the Moesgård Museum, Århus.

Project	Total sherds	Notes
Hulaylah (1991)	1,225	
al-Mataf (1992)	46,377	46,265 in phased sequence
Khatt (1992)	3,646	
RaK Survey (1994)	5,920	includes 371 from Area 74 2001
Kush (1994-2001)	65,203	30,398 in phased sequence
Mountain Village Survey (2001)	2,142	
Total	**124,513**	

Table 1: Pottery assemblages included in this study.

The material above covers a time range from about the 4th/5th to about the 20th century AD. Despite the relatively large quantity of material, there are still holes in our knowledge of the sequence. The most significant area of uncertainty is the post al-Mataf period (late 16th century to mid 20th century), our understanding of which is entirely derived from surface collections. In addition the classification of the al-Mataf sequence (mid 14th to late 16th century), which was one of the first assemblages to be studied, could now be usefully reviewed in the light of more recent work.[1] Nonetheless, this present volume is able to outline a detailed and reasonably reliable classification and analysis of the pottery sequence for the period of study, which will allow further pottery assemblages from survey and excavation to be dated with reasonable certainty.

The starting point for the classification was Hansman's (1985) publication of his own excavations at al-Mataf (Julfar) and in Ras al-Khaimah town. Although, inevitably, a number of Hansman's classifications and conclusions are challenged by the present study, there is no doubt that his work has made a significant contribution to the present state of knowledge.

It will be useful to outline the nature of the most significant contexts listed in Table 1, and to present the stratigraphic sequences of the two excavated sites.

Kush

The Site

The archaeological tell of Kush is situated in the Shimal area of Ras al-Khaimah (**Fig. 2**). The site was first noted by de Cardi during her 1977 survey (de Cardi 1985: 179, site 40f). Excavation of the site began in 1994 and has shown it to be a large archaeological tell with an occupation sequence dating from the Sasanian period to the 13th century AD (Kennet 1997).

The tell measures 120 metres north-south by 100 metres east-west. This is small by comparison with tells in other parts of the Near East but in the Oman Peninsula, where date-palm-frond is the preferred building material, tells do not form quickly and tend to be small. Kush therefore stands out as a site of some significance. The central part of the tell stands 6.5 metres above the level of the surrounding plain and there are at least a further 1.5 metres of archaeological deposits below ground level giving an eight-metre stratigraphic sequence.

The current excavations at Kush were completed in 2001 and the results are now being prepared for publication. For the purposes of the present study, the stratigraphic sequence and phasing of the site and the ceramic assemblage will be summarised.

The Phased Sequence

For the purposes of the present study it is only necessary to deal with the main phased sequence from Trench A at Kush.[2] The trench is 10 metres wide and 26.4 metres long and was designed principally to allow the excavation of a deep quantified sequence through the highest part of the mound.

[1] The study of the 46,377 sherds from al-Mataf was carried out by two people in less than a month in 1992. The shortage of time meant that a fairly crude classification and typology was used, and it was not double checked as fully as the Kush classification was.

[2] A preliminary analysis of the Kush sequence and assemblage was presented in the present author's PhD dissertation in November 2000 (Kennet 2001). Since then a significant amount of work has been done on the phasing and a complete review and reclassification of the pottery has been undertaken.

The phased sequence from Trench A is made up of 1,089 stratigraphic contexts of which 1,002 are included in the phased pottery analysis. The contexts were initially grouped in to 43 Sub-Phases (A - Z & AA - AQ), each of which represents a distinct episode of activity. The Sub-Phases were then grouped into 15 Phases (E-01 to E-11 & W-01 to W-04) of related Sub-Phases and the Phases themselves were grouped into eight Periods (I - VIII), which represent the most significant stages in the long-term historical development of the site. The relationship between the different levels of chronological resolution and analysis is shown in **Fig. 3**. Phases W-01 to W-04 represent the sequence to the western end of the Trench A, which was separated from the eastern end by the mud-brick tower of Period II. The eastern sequence is represented by Phases E-01 to E-11. The pottery is discussed in relation to Phases and Periods, because the size of the Sub-Phase assemblages was, in general, too small to allow meaningful conclusions to be drawn.

The following is a summary of the eight Periods that have been defined in Trench A.

Period I (Phases E-01, W-01, W-02, W-03). At the lowest levels of the sequence there is evidence for two or more Phases of mud-brick architecture which appear to represent a fairly densely-occupied, and perhaps centrally-organized site. It is not clear if the site was defended at this time. These levels date to the Sasanian period between the $4^{th}/5^{th}$ and the $5^{th}/6^{th}$ century. At the western limit of the site the structures of this Period were built onto natural soil, but it is possible that earlier occupation layers exist underneath the present-day centre of the mound.

Period II (Phases E-02, E-03, W-04). Period II represents the construction and use of a late Sasanian or Early Islamic mud-brick tower. The construction of this tower was a defining moment in the site's development. The tower is an unusual structure, parallels for which are not known from any other site in the region, and may represent the stronghold of a Sasanian or Arab feudal landlord. Its construction, and the deliberate destruction of the pre-existing structures, mark a significant change in the organization and layout of the site. This Period is dated to the $7^{th}/8^{th}$ century by a C^{14} date (below).

Period III (Phases E-04, E-05). After a relatively short period of use the tower was abandoned in the late 8^{th} or early 9^{th} century and was left to decay for perhaps a century or more with occasional interruptions in the form of 'squatter' occupation. Period III includes the thick levels of collapsed mud-brick walls of the tower which accumulated whilst it was not in use.

Period IV (Phase E-06). This Period encompasses about 300 years of the site's life from the 9^{th} up to the late 11^{th} or possibly early 12^{th} century. It represents limited re-occupation of the mound, but it is difficult to interpret adequately from the rather limited excavated evidence. It appears to consist of external surfaces, fragmentary walls, and small structures. There may also have been periods of abandonment, possibly during the 10^{th} century.

Period V (Phases E-07, E-08). This Period represents the construction of a large and well-preserved mudbrick structure in the late 11^{th} or early 12^{th} century. Soundings elsewhere on the mound suggest that this was not an isolated structure.

Periods VI and VII (Phases E-09, E-10). These Periods represent an apparent decline in the quality of structures at the site. There are numerous postholes, damaged surfaces, hearths and fragmentary walls. It is difficult to interpret the archaeology due to disturbance caused by heavy pitting in Period VIII. Period VII continued up to the abandonment of the site in the late 13^{th} century.

Period VIII (Phase E-11). Period VIII represents the re-occupation of the site, probably as a rural settlement, in the late 16^{th} or early 17^{th} century. During this Period large pits were dug in the area of Trench A, probably in the search for earth for the production of mud-brick, or for agricultural soil.

Dating the Sequence

With the exception of one C^{14} date from Period II and two coins, the chronology of the Kush sequence depends entirely on pottery. As conservation and study of the material is still underway this may be supplemented by further coins and C^{14} dates in the final publication. Table 2 briefly summarises the chronology of the Kush sequence by Period and states the principal evidence upon which it is based. The capitalised letters refer to pottery classes, the external dating evidence for these is summarised under the relevant entry in Chapter 3.

The Pottery Sequence

A total of 30,398 sherds were recovered from uncontaminated contexts in the phased sequence from Trench A. With the exception of some unglazed body sherds (listed below) they were classified according to the system described in Chapter 3.

Table 3 and Table 4 show the seriated pottery sequence. It should be noted that that unglazed classes CLINKY, SMAG, WAPO and REDSPECK are under-represented in the seriated tables as their counts include only 'diagnostics' (rim, handle, base and decorated sherds) and not body sherds. In the same way is also possible that some body sherds of LISV and TORP were not counted .

Once seriated the sequence shows a clear development in the ceramic assemblage and allows the life spans of many of the classes to be delimited. One of the problems with a deep excavated sequence such as this is residuality, i.e. the survival of older ceramics in later contexts. In some

Period	Phases	Date	Evidence
VIII	E-11	late 16th - early 17th	CBW in this Period is datable to the late 16th/early 17th century. Post al-Mataf JULFAR rim forms (post 1565 AD).
VII	E-10	13th (possibly to 14th)	Some of the DHM in this Period is probably not produced until the 13th century. LQC can be dated late 13th /14th century.
VI	E-09	12th	Much of the Chinese ceramic is 11th or possibly 12th century.
V	E-08 E-07	late 11th/early 12th	First GGW and CWW. One sherd of CWW can be dated late 11th century at the earliest. First GGRAF. First FRIT (excluding a probably intrusive sherd in Phase E-06).
IV	E-06	9th to 11th	First HGRAF - dated to the 11th century. Contains Wajihid fractional dinar dated 951/2+ AD. First BTIN & COBALT - dated to the 9th century.
III	E-05 E-04	late 8th - early 9th	Contains first YBTIN - dated early 9th century.
II	E-03 E-02 W-04	7th/8th	C^{14} date BM-3169 1340+/-35 = 645-710 AD on *in situ* charcoal from rake-out of a fire. Phase W-04 contains a Sasanian coin of Kavad I (issued 507 – 519 AD).
I	E-01 W-03 W-02 W-01	5th-6th (possibly also 4th and 7th)	Abundant FOPW. The assemblage is similar to the PIR D assemblage from al-Dur area F (Mouton 1992: 127-132), especially in terms of TURQ bowl forms but it is also different as it contains LISV, CLINKY, and no Fish plates.

Table 2: Dating of the Kush sequence by Period.

cases it is possible to be confident where occurrences are residual due to a marked decline in quantity; for example FOPW. In other cases it is less clear; for example SMAG.

A very limited amount of individual intrusive sherds has been removed from the tables, this was almost all from 12th and 13th century pits that had been dug into the Sasanian layers on the side of the mound.

Despite some subtle differences in relative proportions, the Period I and II assemblages are quite similar. They have a similar range of coarse wares (CLINKY & SMAG) whilst the only glaze ware present is TURQ. It is also notable that a relatively high proportion (48%) of all Indian imports from the sequence come from these two Periods. Through Period III there are some elements of continuity (e.g. SMAG, LISV, TURQs) but Period IV has a very different assemblage to that of Periods I and II, with a much greater range of glaze wares (e.g. YBTIN, GMONO.1, HGRAF, COBALT & MGPAINT) and new varieties of coarse wares (e.g. SPOT, SPOT.C, SPOT.F, WHITE.F). It could be said that Period III represents something of a transition between these two quite different assemblages. Once established it is essentially the Period IV assemblage that goes on to develop until the end of the sequence, embellished with the addition of an increasingly wide range of glazed wares, mostly from the sgraffiato and frit traditions, and the appearance and increased importance of Far Eastern imports.

It is important to note the rarity or absence of many of the so-called 'Samarra horizon' glazed wares of the 9th and 10th centuries, mostly the later examples (e.g. SPLASH, LUSTRE and EGRAF but also COBALT) that have been found in abundance on sites in the Gulf that are occupied during that time (e.g. Whitehouse 1979a. Tampoe 1989: 87-95. Sasaki 1995: 8-14). This may be due to the fact that occupation levels dating to this period were not uncovered in Trench A, but it may also indicate that Kush was only sporadically occupied during the Abbasid period.

CLASS	I				II			III		IV	V		VI	VII	VIII	
	W-01	W-02	W-03	E-01	W-04	E-02	E-03	E-04	E-05	E-06	E-07	E-08	E-09	E-10	E-11	Total
TURQ.2	206	24	16	39	3	18	15	21		12	18	2	2	4	14	394
TURQ.1	31	16	8	16	3	21	7	7		8	5			1	2	125
CLINKY	31	9	3	3		4	5	2	1		1				1	60
TURQ.4	12	5	21	3	1	12	25	27		6	2	2	12	12	25	165
TURQ.3	3	3	15	7	5	23	52	51	4	28	29	31	15	17	38	321
FOPW	15	2	4	3		5	2						1		2	34
IRAB	17	2	1	2		1	3	1			2	3	1	2	4	39
SMAG	2	2	1	3	5	8	18	31	1	11	10	6	3	1	3	105
FIRE	2		2	2		2	6	2	2	1	1	1	1		1	23
FOPW.2	4		1			2										7
LISV	3	1		1	2	2	14	11		3	2	5	9	2	9	64
TORP			1	3		1	3	6		1	1	2	3	1	3	25
JULFAR	1		1	1	1	1	2	6		6	11	104	188	131	564	1017
TURQ.NRE	2			1		1	19	23	1	3		1	2		5	58
INDIA			2			1		2					1	1	1	8
WHITE.C				1	2	6	23	30		13	20	46	98	68	179	486
IRPW				1	1		19	9	1	1	2		2	2	1	39
SBBW						2	7	4		2	2		4		14	35
PAINT							4					1			10	15
TURQ.5							3	4		2	8		5	7	20	49
FLAKEY							2									2
BEARTH					1			1								2
EGG					1				5	479	198	130	124	44	182	1163
WHITE.F								10	3	198	119	172	232	117	295	1146
SPOT.C								1	1	120	45	2	3	1	9	182
HONEY									1							1
YBTIN									2	29	26	6	5	6	17	91
RED.EGG										42			1			43
SPOT										15	2	1	9	3	3	33
COBALT										9	6	2			1	18
GMONO.1										4	1	15	14	16	55	105
SPOT.F										3	10	5	12	5	150	185
YSPLASH										3	1	2	5		1	12
BTIN										2		1				3
MGPAINT										2	1	1		6	100	110
YGRAF										2	3			1	1	7
FRIT.F										1		2	3	6	14	26
HGRAF										1	2	5	12	15	12	47
JULFAR.5										1	2	1	7	13	38	62
GWW											1	2	12	12	7	34
WAPO											1	4	4	10	17	36
WHT												1		3	2	6
GGRAF												5	6	8	39	58
GGW												6		2	1	9
DGRAF												4	3	2	8	17
CWW												3		1	5	9
BGRAF												1	2	2	7	12
LGJARS												1		4	6	11
MGRAF												1	1	2	15	19
REDSPEC													4	4	11	19
FRIT.W													2	3		5
PGRAF													2	4	11	17
GRE													2		2	4
DUSUN													1			1
EGRAF													1			1
DHM														9	2	11
CHAMP														4	3	7
LQC														4	8	12
FRIT.L														3	3	6
FRIT.T														3		3
MTB														1		1
YEMEN														2	18	20
PERSIA														1		1
CBW															4	4
DHP															4	4
FRIT.B															2	2
FRIT.C															4	4
CEL															1	1
CHIN															1	1
TURQ															3	3
RESIDUAL	4	2	1	2	8	1	4	4		2		2			4	34
UNCLASS-G	37		2	1	1	4	7	1	1	5	15	13	38	33	160	318
UNCLASS-U	1221	359	313	680	268	778	2331	3487	158	1768	1514	1539	2034	1880	4894	23224
UNIQG	1			1		1						3		9	8	23
UNIQU	11	3	1	1	1	4	11	8		4	7	4	26	14	40	135
SPECIAL						2				1			1	1	1	6
WHITE.NRE						1						1				2
EGG.NRE						1			2	1		4	1	1	1	11
Phase Total	1603	428	393	771	303	902	2582	3749	183	2789	2068	2143	2914	2504	7066	
Period Total	3195				3787			3932		2789	4211		2914	2504	7066	30398

Table 3: The seriated Kush sequence by sherd count.

CLASS	I				II			III		IV	V		VI	VII	VIII
	W-01	W-02	W-03	E-01	W-04	E-02	E-03	E-04	E-05	E-06	E-07	E-08	E-09	E-10	E-11
TURQ.2	12.9	5.61	4.07	5.06	0.99	2	0.58	0.56		0.43	0.87	0.09	0.07	0.16	0.2
TURQ.1	1.93	3.74	2.04	2.08	0.99	2.33	0.27	0.19		0.29	0.24			0.04	0.03
CLINKY	1.93	2.1	0.76	0.39		0.44	0.19	0.05	0.55		0.05				0.01
TURQ.4	0.75	1.17	5.34	0.39	0.33	1.33	0.97	0.72		0.22	0.1	0.09	0.41	0.48	0.35
TURQ.3	0.19	0.7	3.82	0.91	1.65	2.55	2.01	1.36	2.19	1	1.4	1.45	0.51	0.68	0.54
FOPW	0.94	0.47	1.02	0.39		0.55	0.08						0.03		0.03
IRAB	1.06	0.47	0.25	0.26		0.11	0.12	0.03			0.1	0.14	0.03	0.08	0.06
SMAG	0.12	0.47	0.25	0.39	1.65	0.89	0.7	0.83	0.55	0.39	0.48	0.28	0.1	0.04	0.04
FIRE	0.12		0.51	0.26		0.22	0.23	0.05	1.09	0.04	0.05	0.05	0.03		0.01
FOPW.2	0.25		0.25			0.22									
LISV	0.19	0.23		0.13	0.66	0.22	0.54	0.29		0.11	0.1	0.23	0.31	0.08	0.13
TORP			0.25	0.39		0.11	0.12	0.16		0.04	0.05	0.09	0.1	0.04	0.04
JULFAR	0.06		0.25	0.13	0.33	0.11	0.08	0.16		0.22	0.53	4.85	6.45	5.23	7.98
TURQ.NRE	0.12			0.13		0.11	0.74	0.61	0.55	0.11		0.05	0.07		0.07
INDIA			0.51			0.11		0.05					0.03	0.04	0.01
WHITE.C				0.13	0.66	0.67	0.89	0.8		0.47	0.97	2.15	3.36	2.72	2.53
IRPW				0.13	0.33		0.74	0.24	0.55	0.04	0.1		0.07	0.08	0.01
SBBW						0.22	0.27	0.11		0.07	0.1		0.14		0.2
PAINT							0.15					0.05			0.14
TURQ.5							0.12	0.11		0.07	0.39		0.17	0.28	0.28
FLAKEY							0.08								
BEARTH					0.33			0.03							
EGG					0.33				2.73	17.2	9.57	6.07	4.26	1.76	2.58
WHITE.F								0.27	1.64	7.1	5.75	8.03	7.96	4.67	4.17
SPOT.C								0.03	0.55	4.3	2.18	0.09	0.1	0.04	0.13
HONEY									0.55						
YBTIN									1.09	1.04	1.26	0.28	0.17	0.24	0.24
RED.EGG										1.51			0.03		
SPOT										0.54	0.1	0.05	0.31	0.12	0.04
COBALT										0.32	0.29	0.09			0.01
GMONO										0.14	0.05	0.7	0.48	0.64	0.78
SPOT.F										0.11	0.48	0.23	0.41	0.2	2.12
YSPLASH										0.11	0.05	0.09	0.17		0.01
BTIN										0.07		0.05			
MGPAINT										0.07	0.05	0.05		0.24	1.42
YGRAF										0.07	0.15			0.04	0.01
FRIT.F										0.04		0.09	0.1	0.24	0.2
HGRAF										0.04	0.1	0.23	0.41	0.6	0.17
JULFAR.5										0.04	0.1	0.05	0.24	0.52	0.54
GWW											0.05	0.09	0.41	0.48	0.1
WAPO											0.05	0.19	0.14	0.4	0.24
WHT												0.05		0.12	0.03
GGRAF												0.23	0.21	0.32	0.55
GGW												0.28		0.08	0.01
DGRAF												0.19	0.1	0.08	0.11
CWW												0.14		0.04	0.07
BGRAF												0.05	0.07	0.08	0.1
LGJARS												0.05		0.16	0.08
MGRAF												0.05	0.03	0.08	0.21
REDSPEC													0.14	0.16	0.16
FRIT.W													0.07	0.12	
PGRAF													0.07	0.16	0.16
GRE													0.07		0.03
DUSUN													0.03		
EGRAF													0.03		
DHM														0.36	0.03
CHAMP														0.16	0.04
LQC														0.16	0.11
FRIT.L														0.12	0.04
FRIT.T														0.12	
MTB														0.04	
YEMEN														0.08	0.25
PERSIA														0.04	
CBW															0.06
DHP															0.06
FRIT.B															0.03
FRIT.C															0.06
CEL															0.01
CHIN															0.01
TURQ															0.04

Table 4: The seriated Kush sequence by percentage of total Phase assemblage by sherd count.

Al-Mataf (Julfar)

The Site

Al-Mataf was discovered by de Cardi in 1968 during the course of the first archaeological survey of Ras al-Khaimah. She located a large coastal site strewn with Ming porcelain and other pottery which was, according to local tradition, the site of Julfar (Williamson 1973a: 52, note 42. de Cardi & Doe 1971: 249-50). The area identified by de Cardi is located two kilometres from Kush and covers a length of sand bar along the coast. The core of urban development lies within a 900-metre area of low, artificial mounding known as al-Mataf (Hansman 1985: 3).

The al-Mataf sand bar has lagoons on either side. The inner lagoon has silted up over the last 40 years but the outer is still open and is separated from the sea by a more recent sand bar. Large-scale excavations by four different teams in the 1990s have confirmed al-Mataf's identification as the urban centre of Julfar and have given a clear understanding of the development of the town from a small coastal fishing village in the 14th century to a large urban centre by the 15th through to its subsequent abandonment by the late 16th century. The evidence from these excavations has recently been brought together and reconsidered by the present author (Kennet 2003).

The pottery from al-Mataf that is included in this study comes from five seasons of excavations directed by King between 1989 and 1992 (King 1990, 1991, 1992). The phasing is based on the preliminary outline by Connolly (1993).

The Phased Sequence

King's excavations concentrated on what appears to be the central mosque of Julfar. The mosque was first built early in the site's history and was later reconstructed four times on the same site, giving a sequence of five architectural Phases (I - V) to which a pre-construction Phase (PRE), an abandonment Phase (VI), and a Phase representing the end of occupation at the site (REC) have been added (Connolly 1993). The 'Occupation Area' to the north of the mosque was also excavated, although less intensively. It appears to consist of a large courtyard house that was also reconstructed several times. Connolly is confident that the phasing of the occupation area matches that of the mosque, but the present author is less convinced of this, and for this reason the phasing and analysis of the two areas has been kept separate.

The excavated layers consist predominantly of secondary deposits that were probably laid down as levelling during the construction of the various mosque and house phases. There is very little *in-situ* occupation-debris such as rubbish pits or surfaces. Secondary deposits normally produce a high proportion of residual material - that is to say, material that is significantly older than the deposition date of the layer within which it is contained - and, to judge from the dating given by the Far Eastern ceramics (Table 5), this is indeed the case. Nonetheless, the seriated pottery from the site (Table 7 & Table 8) shows a clear pattern of development that demonstrates the integrity of the sequence.

The following summary of the eight Phases is taken from Connolly 1993 (1-8):

Phase Pre (Early to mid. 14th). This Phase pre-dates the construction of the first mosque at al-Mataf. It consists of pits, post-holes and patches of burning lying directly on sterile beach sand.

Phase I (Late 14th). This Phase consists of a small sand-brick mosque - of which only a length of wall has been exposed - and a large water cistern. The mosque was a simple rectangular building measuring 7.5 m by 9.4 m.

Phase II (14th/15th). During this Phase the first mosque was destroyed in order to prepare for the construction of a second, enlarged mosque which preserved the same plan as the northern part of the first mosque but doubled its size by expanding to the south. A large sand-brick structure was built in the Occupation Area.

Phase III (Late 15th/16th). Phase III represents a major rebuilding of the mosque as a much bigger structure measuring 26 m north-south by 9 m east-west. The walls were made of sand brick and the interior was divided by two rows of pillars built of beach-rock and coral. The house in the Occupation Area was also rebuilt with a slightly different plan.

Phase IV (16th). At the end of Phase III it appears that the mosque was left to fall into a state of disrepair before the rebuilding of Phase IV. This Phase marks two important changes in the construction and layout of the mosque: the first is the use of stone and lime-mortar, the second the re-orienting of the whole mosque by six degrees towards the south. The buildings in the Occupation Area appear to have collapsed and been abandoned during this Phase.

Phase V (16th). Phase V represents a further rebuilding of the mosque, preserving the same orientation and building material, but with considerable alterations in the ground plan.

Phase VI (mid/late 16th). Phase V was the last mosque to be built on the site; Phase VI represents its abandonment and collapse. The walls were partially robbed out and pits and ovens were scattered about the ruin.

Phase Rec (16th/17th). Phase Rec represents the end of occupation. The mosque appears to have been visited from time to time by stone robbers whilst a shallow sandy soil accumulated over the building.

Dating the Sequence

	Pre	I	II	III	IV	V	VI	Rec
	early to mid 14th	late 14th	14th/15th	late 15th-16th	16th	16th	mid/late 16th	16th/ 17th
13/14th		-	3	-	-	1	1	-
14th		-	10	11	3	5	7	4
14/15th		3	6	40	7	10	6	8
15th		1?	9	15	34	20	60	74
15/16th			2?	1	3	10	11	44
16th				14	22	9	57	61
16/17th							-	1
17/18th							1	-
18th							1	-
Total		**4**	**30**	**81**	**69**	**55**	**144**	**192**

Table 5: A summary of the datable Far Eastern ceramics from the British excavations (numbers indicate quantity of sherds per Phase).

A number of coins were found during King's 1989 to 1992 excavations, but these have not yet been cleaned or studied and it has not therefore been possible to use them to establish the chronology of the sequence. The dating is therefore based on the Far Eastern ceramics and on Lowick's study of the coins from Hansman's excavations (Lowick 1985b).

Regina Krahl briefly examined all of the Far Eastern wares from King's excavations and the dates she has suggested are summarized in Table 5. There is a broad pattern of chronological progression but there are clearly high levels of residuality in all Phases and there are three anomalies that may be intrusive or misidentifications (marked '?').

The beginning of occupation at al-Mataf (Phase Pre) can be dated to the early to mid-14th century based on the style of the Longquan Celadons. This dating is the same as that independently arrived at by Sasaki (1993: 46) and Hansman (1985: 8).

The absence of CBW from the first three Phases indicates that the al-Mataf sequence spans the time at which CBW began to be exported to the Near East in large quantities (Table 37). This can be dated to the mid to late 15th century (Krahl 1986ii: 533. Krahl 1997: 154), and occurred in Phase III.[3] Although earlier examples of CBW have been found from the Gulf area, these are quite rare (e.g. Wiesner 1979: 13, figs. 4, 5).[4]

Hansman dated the end of occupation at al-Mataf to 1633 based on Portuguese and Arab historical records (Hansman 1985: 10). However, the absence of Kraak porcelain (KRAAK) at al-Mataf suggests that this is too late. The latest porcelains from the British sequence are Swatow wares (SWATOW) of which there are seven sherds (III - 1; V - 1; VI - 1; Rec - 4). Very broadly these can be dated to between 1550 and 1650 (Chapter 3 SWATOW). The single fragment from Phase III is very late for this Phase. It came from a gully beside the mosque whose stratigraphic relationship with Phase III is open to question. This sherd can therefore be ignored as intrusive. The sherd from Phase V is from the upper limits of that Phase just below Phase IV. Hansman notes that only one fragment of Swatow was found at al-Mataf and he attributes this to the fact that it was not imported locally (Hansman 1985: 30, CPIIw). However, he notes that five sherds were found in the trenches excavated at Ras al-Khaimah (Hansman 1985: 30). The conclusion must be that the occupation at al-Mataf was already coming to an end by the time Swatow wares were introduced in the last half of the 16th century.

This dating is supported by Sasaki who has studied and published a large amount of pottery from the site, most of which he places between the early 14th and the late 16th century (e.g. Sasaki & Sasaki 1992: 107, 119).

A middle to late 16th century date for the end of the al-Mataf sequence is also suggested by the coins from al-Mataf and al-Nudūd published by Lowick (Lowick 1985b) and shown in Table 6. No coin is dated later than 1555 AD (963 *Hijra*) with the exception of No. 16 which comes from area K, an area of later occupation to the north.

[3] This is a slight revision to the dating proposed in Kennet 2003.
[4] The two sherds from al-Mataf that Hansman attributes to the 14th century may be examples of these (Hansman 1985: CPII,d, e).

No	Area	Qnt	Fig	Date AD	Date *Hijra*	Description
1	N	1	8a	1351-54	752-755	Silver, Mubāriz al-Din
2	N	1	8b	15th	9th	Silver, Abū 'l-Ghazi
3	MA	1	-		902 or 952	Bronze, 20-25 mm
4	N	1	8c	15th/early 16th	-	Bronze, large, al-"a'dham"
5	MA/N	2	8d	1477-1507/ 1533-43	882-913 or 940-950	Bronze, Salghur Shāh
6	?	2	-	1507	913	Large, "large numerals"
7	MA	1	8e	1550	957	Small Jarūn
8	MA	1	8g	1555	963	Small, faint date, counter.
9	MA/?	5	8h	late 15th/16th	-	ḍarb Baghdad
10	MA/N	5	8i	pre-1500	pre-906	ḍarb Shīrāz, ᶜadl sulṭān
11	MA	1	8j	pre-1500	pre-906	Shaykh Murshid
12	MA	1	8l	15th/16th	-	Mogadishu
13	MA	1	-		931?	uncert.
14	N	1	-		913?	uncert.
15	N	1	8f	16th or later	10th	ᶜadl Jarūn, counter.
16	MA-K	1	8n	18th	12th	anon. Persian.
Total		26				

Table 6: A summary of the coin finds from al-Mataf and al-Nudūd (from Lowick 1985b). The reference number (left hand column) has been allocated by the present author; the 'Fig.' reference is to Lowick 1985b. N = al-Nudūd, MA = al-Mataf.

The Pottery Sequence

A total of 46,265 sherds were recovered from the phased sequence; 33,392 from the Mosque and 12,873 from the Occupation Area (112 sherds have no Phase). Table 7 and Table 8 show the seriated assemblages from the two areas.

As at Kush, a clear pattern of development can be seen in the sequence. To some extent this depends upon the absence of classes from some Phases. In Appendix 2 the concept of a 'significant absence' is discussed and defined. According to that definition it is apparent that only a few of the absences are likely to be significant. For example, the absence of JULFAR.1 (White-painted Julfar ware) from Phase I of the Mosque seems to be significant. Given that JULFAR.1 makes up 6.8% of the total Mosque assemblage, we would expect about 12 sherds amongst the 188 from this Phase. By contrast, the absence of Martaban (MTB) from the same Phase is probably not significant as it makes up only 0.19% of the total Mosque assemblage and we would therefore expect less than one sherd from this Phase.

Two other absences are worth mentioning: both CBW and KHUNJ do not occur before Phase III in either area. As they make up 0.52% and 0.47% of the Mosque assemblage respectively, we would expect six sherds of CBW and five of KHUNJ amongst the 1,279 sherds from the Phase-II deposits. These absences can therefore be accepted as being significant. The absence of LIME from Phase II of the Occupation Area and Phase I of the Mosque is problematic - its absence from Phase I of the Mosque sequence is probably not significant but its absence from Phase II of the Occupation Area probably is. The absence of Persian Blue Speckled (PERSIA) from Phase I of the Mosque is probably not significant.

Very broadly we can define an early and a late al-Mataf assemblage. The early assemblage encompasses Phases Pre to II. During this time Julfar ware was predominantly unpainted (although painted Julfar ware did exist); cooking pot CP1.2 was the most common cooking pot (see below), Underglaze Painted Earthenware (UNDERGL) dominated the glazed assemblage, and Far Eastern imports were limited to Longquan Celadon (LQC).

The late assemblage encompasses Phases IV to Rec. During this time painted Julfar ware (JULFAR.1) made up a much higher proportion of the coarse-ware assemblage. A new cooking pot type CP1.1 began to be used and eventually became more common than CP1.2. A new group of glaze classes began to circulate, including Persian Blue Speckled (PERSIA) and, somewhat later, KHUNJ. UNDERGL became a less significant part of the glazed assemblage. New Far Eastern imports began to circulate, the most important being CBW, which increased in quantity until it was more common than LQC.

There was a gradual development from one assemblage to the other within the sequence. Classes in circulation in the early assemblage do not completely disappear from the sequence, either because they stayed in circulation or because of the affect of residuality. However, if two single-phase sites were to be excavated, one from Phase I and one from Phase VI, we would expect the assemblages to be notably different. The Sasakis have independently suggested the definition of a 'lower' and an 'upper' assemblage along similar lines (Sasaki & Sasaki 1992: 116).

CLASS	PRE	I	II	III	IV	V	VI	REC
JULFAR	7	54	929	1618	4539	4892	5207	6554
WHITE	7	114	186	519	909	900	830	715
UNDERGL	2	7	72	125	279	148	119	104
WPINK		3	16	73	71	83	67	38
LQC		2	13	29	29	21	22	58
LSANDY		2	1	27	15	11	27	17
SCHINA		1	5	9	17	8	12	20
GRITTY		1			6	3	3	10
MUSTARD		1			1	1	4	2
TURQ		2	2	2				
MGPAINT		1						
JULFAR.1			30	167	752	432	462	422
LIME			7	26	96	36	93	63
PERSIA			3	18	51	33	60	58
JULFAR.2			3	9	35	22	40	23
JULFAR.4			1	11	13	25	72	3
MTB			2	2	10	4	17	31
FRIT.BW			2	7	18	12	11	14
LEATH			1	1	5	8	14	15
BLGREY			1	9	1	2	3	3
BLACK			2	2		1	1	5
BSTONE			1	1				3
BURN			2	1	1			
CBW				11	22	19	45	78
KHUNJ				10	44	34	36	32
FRIT.DEG				5	4	18	8	11
GMONO.2				1	12	2	3	5
EASTIN				1	7		5	2
YELWHIT				2	2	4	2	3
RSLIP				3	1	2	3	
WPORC				2		2	4	
SWATOW				1		1	1	4
GBSTONE				2		3		
BWEARTH				2				
FRIT.CEL				2				
THIN					2	3	3	19
FRIT.TB					4	1		1
ENAM					1			1
DKHUNJ						1	3	
VIET						2		2
NONCHIN						1		
IMITCEL							1	3
MOD							1	
LGREEN								1
DHM								1
DHP								1
Unclassified					16	1	5	6
Total	16	188	1279	2698	6963	6736	7184	8328

CLASS	PRE	I	II	III	IV	V	VI	REC
JULFAR	43.75	28.72	72.63	59.97	65.19	72.62	72.48	78.70
WHITE	43.75	60.64	14.54	19.24	13.05	13.36	11.55	8.59
UNDERGL	12.50	3.72	5.63	4.63	4.01	2.20	1.66	1.25
WPINK		1.60	1.25	2.71	1.02	1.23	0.93	0.46
LQC		1.06	1.02	1.07	0.42	0.31	0.31	0.70
LSANDY		1.06	0.08	1.00	0.22	0.16	0.38	0.20
SCHINA		0.53	0.39	0.33	0.24	0.12	0.17	0.24
GRITTY		0.53			0.09	0.04	0.04	0.12
MUSTARD		0.53			0.01	0.01	0.06	0.02
TURQ		1.06	0.16	0.07				
MGPAINT		0.53						
JULFAR.1			2.35	6.19	10.80	6.41	6.43	5.07
LIME			0.55	0.96	1.38	0.53	1.29	0.76
PERSIA			0.23	0.67	0.73	0.49	0.84	0.70
JULFAR.2			0.23	0.33	0.50	0.33	0.56	0.28
JULFAR.4			0.08	0.41	0.19	0.37	1.00	0.04
MTB			0.16	0.07	0.14	0.06	0.24	0.37
FRIT.BW			0.16	0.26	0.26	0.18	0.15	0.17
LEATH			0.08	0.04	0.07	0.12	0.19	0.18
BLGREY			0.08	0.33	0.01	0.03	0.04	0.04
BLACK			0.16	0.07		0.01	0.01	0.06
BSTONE			0.08	0.04				0.04
BURN			0.16	0.04	0.01			
CBW				0.41	0.32	0.28	0.63	0.94
KHUNJ				0.37	0.63	0.50	0.50	0.38
FRIT.DEG				0.19	0.06	0.27	0.11	0.13
GMONO.2				0.04	0.17	0.03	0.04	0.06
EASTIN				0.04	0.10		0.07	0.02
YELWHIT				0.07	0.03	0.06	0.03	0.04
RSLIP				0.11	0.01	0.03	0.04	
WPORC				0.07		0.03	0.06	
SWATOW				0.04		0.01	0.01	0.05
GBSTONE				0.07		0.04		
BWEARTH				0.07				
FRIT.CEL				0.07				
THIN					0.03	0.04	0.04	0.23
FRIT.TB					0.06	0.01		0.01
ENAM					0.01			0.01
DKHUNJ						0.01	0.04	
VIET						0.03		0.02
NONCHIN						0.01		
IMITCEL							0.01	0.04
MOD							0.01	
LGREEN								0.01
DHM								0.01
DHP								0.01
Unclassified					0.23	0.01	0.07	0.07
Total	16	188	1279	2698	6963	6736	7184	8328

Table 7: The seriated al-Mataf mosque assemblage (sherd count & % of total Phase- assemblage by sherd count).

CLASS	PRE	I	II	III	IV	V	VI	REC
JULFAR	2	199	290	2873	534	442	3751	969
WHITE	2	31	62	492	152	63	637	110
JULFAR.1	1	1	4	134	27	43	590	74
UNDERGL		10	24	242	27	26	155	8
WPINK		4	12	34	35	6	52	11
LQC		2	11	22	1	2	14	3
FRIT.BW		1	3	8		3	8	1
SCHINA			1	5		2	17	2
LIME				8		2	144	20
PERSIA				8	4	4	76	20
KHUNJ				1		1	45	7
CBW				3			25	18
FRIT.DEG				16	1	3	20	
LSANDY				5	1		26	4
BLGREY				1		24	8	
JULFAR.2				4		1	23	4
LEATH				3		1	15	
MTB				2		1	9	3
JULFAR.4				2		7	1	
YELWHIT				1	4		4	
BURN				7				
RSLIP				4				
BSTONE				2				
FINPAINT				1			1	1
BWEARTH				1				
DHP				1				
GBSTONE						1		
EASTIN							4	1
GMONO.2							5	
MUSTARD							2	
FRIT.TB							1	
POLY							1	
VIET							1	
GRITTY								11
IMITCEL								3
THIN								1
BLACK								1
Unidentified		2		4			2	
Total	5	250	407	3884	786	632	5637	1272

CLASS	PRE	I	II	III	IV	V	VI	REC
JULFAR	40.00	79.60	71.25	73.97	67.94	69.94	66.54	76.18
WHITE	40.00	12.40	15.23	12.67	19.34	9.97	11.30	8.65
JULFAR.1	20.00	0.40	0.98	3.45	3.44	6.80	10.47	5.82
UNDERGL		4.00	5.90	6.23	3.44	4.11	2.75	0.63
WPINK		1.60	2.95	0.88	4.45	0.95	0.92	0.86
LQC		0.80	2.70	0.57	0.13	0.32	0.25	0.24
FRIT.BW		0.40	0.74	0.21		0.47	0.14	0.08
SCHINA			0.25	0.13		0.32	0.30	0.16
LIME				0.21		0.32	2.55	1.57
PERSIA				0.21	0.51	0.63	1.35	1.57
KHUNJ				0.03		0.16	0.80	0.55
CBW				0.08			0.44	1.42
FRIT.DEG				0.41	0.13	0.47	0.35	
LSANDY				0.13	0.13		0.46	0.31
BLGREY				0.03		3.80	0.14	
JULFAR.2				0.10		0.16	0.41	0.31
LEATH				0.08		0.16	0.27	
MTB				0.05		0.16	0.16	0.24
JULFAR.4				0.05		1.11	0.02	
YELWHIT				0.03	0.51		0.07	
BURN				0.18				
RSLIP				0.10				
BSTONE				0.05				
FINPAINT				0.03	0.38		0.02	0.08
BWEARTH				0.03				
DHP				0.03				
GBSTONE						0.16		
EASTIN							0.07	0.08
GMONO.2							0.09	
MUSTARD							0.04	
FRIT.TB							0.02	
POLY							0.02	
VIET							0.02	
GRITTY								0.86
IMITCEL								0.24
THIN								0.08
BLACK								0.08
Unidentified		0.80		0.10			0.04	
Total	5	250	407	3884	786	632	5637	1272

Table 8: The seriated al-Mataf occupation area assemblage (sherd count & % of total Phase-assemblage by sherd count).

Surveys in Ras al-Khaimah

For the period post-dating the abandonment of al-Mataf in the late 16th century there is no excavated sequence. This could be rectified by excavations in, for example, the northern part of the old town of Ras al-Khaimah where Hansman's 1977/78 trenches uncovered a sequence of occupation dating from about the 15th century to recent times (Hansman 1985: 16-20).

Instead, our knowledge of the development of the pottery assemblage in this period is based on material collected from surface surveys. The most important of these (in terms of size and comprehensiveness) is the assemblage of 5,920 sherds collected by the 1994 Survey of the Ṣīr and Jiri plains (Kennet 2002a). In addition, surface surveys of two smaller areas, Hulaylah and Khatt, located at the northern and southern extremities of northern Ras al-Khaimah, provide further useful assemblages (Kennet 1994. de Cardi *et al.* 1994) as does the material from the unpublished Mountain Village Survey.

Hulaylah

Jazīrat al-Hulaylah is an eight-kilometre barrier island ten kilometres to the north of al-Mataf (**Fig. 4**). Hansman excavated some trenches in the southern part of the island in 1977 where he reported finds of the Early Islamic period (Hansman 1985: 33, 49, fig. 1). In 1991 the present author conducted a brief survey of the island (Kennet 1994). Since 1994 Sasaki has been excavating on the island and preliminary reports on this work are published (Sasaki 1995, 1996, 1998).

There is evidence of settlement from about the 5th century to the early 20th century although there is very little indication of occupation dating to the later-11th, 12th or 13th century. At the time of the 1991 survey it was not possible to make a reliable distinction between the al-Mataf and post-al-Mataf assemblages, although it is now clear that material of both periods was found.

A total of 1,225 sherds were picked up from 36 areas across the island (Kennet 1994: fig. 5). The later 9th and

10th-century Samarran Abbasid assemblage appears to be particularly well represented here.

Khatt

Khatt, located at the southern extremity of Northern Ras al-Khaimah (**Fig. 4**) was first explored by de Cardi during her 1968 and 1977 surveys (de Cardi & Doe 1971: 252-254. de Cardi 1985: 182-185). In 1992 a more detailed survey of the oasis was conducted (de Cardi *et al.* 1994: 53 - 63).

Firm evidence was found for continued occupation at Khatt from the late pre-Islamic period to the present day with the notable exception of the 11th to 14th century, which seems to be hardly represented.

A total of 3,646 sherds from the Sasanian and Islamic periods were picked up and catalogued by the 1992 survey (de Cardi *et al.* 1994: 53-63).

In addition a small sounding was made into one of the occupation mounds located by the 1992 survey and a small assemblage of 5th century AD material was uncovered (Kennet 1998).

The 1994 Survey of Ras al-Khaimah (the 1994 Survey)

The objective of the 1994 Survey was to use field walking techniques to provide some reliable, systematically-collected data with which to understand the development of settlement in northern Ras al-Khaimah (Kennet 2002a). Because of the specific nature of agricultural practice and its effect on the archaeological record in Ras al-Khaimah, the methodology established by the Siraf and Suhar surveys was adopted (Costa & Wilkinson 1987: 79-86. Wilkinson 1974: 129). This involves the definition of surface pottery collection 'Areas' from which ubiquity analysis is used to compare the relative abundance of pottery of different periods (Kennet 2002a: 154-156).

The pottery collection Areas were organised into three transects spaced at roughly equal distances between Shimal and Khatt (**Fig. 4**). Each transect crosses the plain from the coast or sand dunes in the west towards the foot of the mountains in the east.

A total of 5,920 sherds were collected by the survey.

The Mountain Village Survey

In December 2001 a team including the present author visited 31 of the mountain villages of the Musandam Peninsula as part of an archaeological study. The results are not yet published.

A total of 2,142 sherds were picked up and catalogued. JULFAR forms CP4.4, CP4.5, CP5.3 and CP7.1 were first identified at this time.

The Survey Assemblages

As would be expected, the 12,933 sherds picked up and catalogued by the surveys include many types and classes already familiar from Kush and al-Mataf. However, they also reveal a number of types and classes that do not occur at either of those sites. Because the Kush and al-Mataf assemblages are so large it can be stated with reasonable confidence that any type or class of pottery that occurs frequently in the survey assemblages and does not occur at Kush or al-Mataf did not circulate during the time when those sites were occupied, and can therefore be assigned to the post-al-Mataf period. Obviously this assumes that pre-Sasanian material can also be eliminated. As has been stated above, the ceramic sequence from the 3rd millennium to the 4th century AD is well documented for the United Arab Emirates.

Type/Class	Name	Quantity
Lid	Julfar ware type	10
CP2.8	Julfar ware type	4
CP4.1	Julfar ware type	94
CP4.2	Julfar ware type	32
CP4.3	Julfar ware type	15
CP4.4	Julfar ware type	21
CP4.5	Julfar ware type	19
CP5	Julfar ware type	1
CP5.1	Julfar ware type	41
CP5.2	Julfar ware type	8
CP5.3	Julfar ware type	9
CP7.1	Julfar ware type	34
B5.1	Julfar ware type	8
B6.1	Julfar ware type	17
B7.1	Julfar ware type	9
P1.3	Julfar ware type	3
P2.2	Julfar ware type	5
J3.1	Julfar ware type	7
J4.1	Julfar ware type	5
BUFF	Buff Ware	70
REDYEL	Red & Yellow Glaze	16
WILLOW	Willow Pattern	9

Table 9: Common types and classes that occur on the 1994 Survey or Mountain Village Survey but not at Kush or al-Mataf.

In this way it has been possible to isolate a series of types and classes (glazed and unglazed) that we can use to identify post-al-Mataf occupation. These are listed in Table 9 and are described and discussed in Chapter 3. At the same time it should be recognised that there were a large number of classes amongst the 1994 Survey material that were represented by only a few sherds. As it is very difficult accurately to define classes based on very few sherds, these classes have not been described or considered here.

Of the post-al-Mataf JULFAR types Cooking pot 4 (CP4.1 to CP4.5) is the most common (181 examples). CP4 is a cooking pot with an everted rim with a trough on its upper surface probably intended to hold a lid. Lids also form part of the post-al-Mataf assemblage as does Bowl 5 (B5.1), the rim of which is notched in a similar fashion to CP4, probably for the same purpose. It would therefore seem that the introduction of ceramic lids for cooking pots occurred only after the abandonment of al-Mataf in the mid/late 16th century. Cooking pot 5 (CP5, CP5.1, CP5.2, CP5.3) is another type listed in Table 9. This was possibly a predecessor to CP4 although not enough data is yet available to demonstrate this. CP5 cooking pots have an almost vertical rim, which is curved slightly outwards and may also have been intended to hold a lid. CP7.1 has a wide everted rim and seems to be more common in the mountain villages than it is on the plain.

In addition to those classes that do not occur at al-Mataf or Kush, there are three classes that are common on the 1994 Survey and do not occur at Kush, and occur only as a single example at al-Mataf (Table 10). It is suggested that the presence of these classes at al-Mataf results either from misidentification or from post-abandonment activity and that they should therefore be included in the post-al-Mataf assemblage.

Class	Name	Quantity	al-Mataf quantity
CHOC	Black Angular Inclusions	107	1
MOD	Modern Porcelain	92	1
IMITCEL	Creamy Imitation Celadon	20	1

Table 10: Classes that are common in the 1994 Survey assemblage, do not occur at Kush, and occur only as a single example at al-Mataf.

Area 74

Comparison of the Kush, al-Mataf, and survey assemblages has allowed us to isolate, by a process of deduction, a range of types and classes that were in common circulation in the post-al-Mataf period (post-16th to mid 20th century). However, if we wish to use surface pottery collections to isolate al-Mataf period occupation (14th - 16th century) we need to be able to distinguish between those types and classes that circulated only during the occupation of al-Mataf and those that also continued to circulate after its abandonment. Obviously, only those that did not continue to circulate after the abandonment of the site can be used to identify al-Mataf period occupation. As we lack an excavated post-al-Mataf assemblage we must turn to the surface assemblage from Area 74 to achieve this.

Area 74 consists of a dense scatter of pottery marking the remains of a large village located 50 metres to the north of the mud-brick fort (*sūr*) known as al-Ḥuṣūn or Miwaylḥa (de Cardi & Doe 1971: 250. Kennet 1995: tower 38), which lies about 6.5 kilometres to the northeast of Khatt (**Fig. 4**). A total of 671 sherds of pottery was collected from this site, over a distance of 450 metres (UTM 40 R 0394275/2837130 - UTM 40 R 0394269/2836686). Pottery is concentrated in dense pockets between 5 and 20 metres across probably representing the sites of houses, between which there are gaps of about 30 metres with no pottery. The houses that made up the original village were probably built from date-palm fronds, although some mud-brick architecture may have stood at the site.

The complete absence of JULFAR cooking pot CP1.2 from Area 74 indicates that this site was not occupied during the main al-Mataf period. Our analysis of the al-Mataf assemblage has shown that CP1.2 is the most abundant Julfar ware type there. The analysis also shows that the type was in decline towards the end of the sequence and was being superseded by CP1.1 (**Fig. 27**). It is therefore reasonable to assume that any large late-Islamic surface assemblage from northern Ras al-Khaimah that does not contain sherds of CP1.2 was occupied only after the abandonment of al-Mataf. Given that CP1.2 makes up about 3% of the al-Mataf assemblage, we would expect about 20 sherds in the 671-sherd assemblage from Area 74 if the site had been occupied during the al-Mataf period. Its total absence is therefore good evidence of a purely post-al-Mataf occupation.

This conclusion is supported by the absence of a number of other types and classes common at al-Mataf such as LQC, PERSIA, WPINK and LIME as well as the typical al-Mataf period JULFAR forms (**Fig. 21, Fig. 22**).

However, the 50 sherds of Chinese-Blue-and-White Porcelain from Area 74 were examined by R Krahl who has shown that 44 of them are pre-Swatow and can be dated to the 16th century. This is rather surprising, as CBW dating to the 17th century and later was expected. The presence of these sherds indicates that there must be a period of overlap between the end of the al-Mataf sequence and the occupation of Area 74. The absence of post 16th-century CBW from Area 74 is probably due to a decline in Far Eastern imports in Ras al-Khaimah after the decline of al-Mataf.

Examination of the Area 74 assemblage (Table 11 & Table 12) shows that, as would be expected, a number of types and classes which have already been defined as dating to the post-al-Mataf period are present; e.g. Red & Yellow Glaze (REDYEL), Black Angular Inclusions (CHOC), and examples of Julfar-ware types CP4, CP5, and B5 etc, none of which occur at al-Mataf. However, KHUNJ, Mustard (MUSTARD), Green glazed (GMONO.2), and Large Sandy White Storage jars (LSANDY), which are all present at al-Mataf, are shown, by the fact that they are also present in the Area 74 assemblage, to have continued in circulation after the abandonment of al-Mataf. A number of Julfar-ware types, most importantly CP1.1, can also be excluded as al-Mataf period type fossils by their presence at Area 74.

Class	Qnt	Class	Qnt
BUFF	2	MOD	3
CBW	50	MUSTARD	12
CHOC	6	UNCLASS-G	7
ENAM	7	UNCLASS-U	6
GMONO.2	54	WPORC	11
IRONGL	1	REDYEL	26
JULFAR	196	SCHINA	1
KHUNJ	97	TURQ	7
LSANDY	2	UNIDENTIFIED	8
LISV	1	WHITE	48
MGPAINT.2	72		

Table 11: Classes from the Area 74 assemblage.

Type	Qnt	Type	Qnt
B5.1	1	H2	3
B6.1	3	H3	3
B7.1	8	H5	1
CP1.1	4	H6	1
CP2.4	1	J1.1	2
CP2.8	1	J2	1
CP3.1	3	J4.1	1
CP4.1	9	P1.3	1
CP4.2	2	P2.1	1
CP4.4	9	J2.3	4
CP4.5	8	Storage jar	9
CP5.1	10	None	108
CP7.1	2		

Table 12: Julfar ware rims forms from Area 74.

Those classes and types that occur at al-Mataf but do not occur within the Area 74 assemblage include Persian Blue Speckled (PERSIA), Longquan Celadon (LQC), Pink and White (WPINK), Lime-tempered (LIME), and Julfar-ware types CP1.5, CP2.1, CP2.2, B1.1, B1.4, and J2.1. Given the size of the Area 74 assemblage, it is only in the cases of PERSIA, LIME, CP2.1, CP2.2 and J2.1 that it can reliably be suggested that absence from the Area 74 assemblage is significant.[5] PERSIA makes up 1.6% of the survey assemblage, and 0.72% of the al-Mataf assemblage. Between 4 and 10 sherds would therefore be expected in the 671-sherd assemblage from Area 74. LIME makes up and 0.72% of the survey assemblage and 1.07% of the al-Mataf assemblage meaning that between 4 and 7 sherds would have been expected at Area 74. J2.1 makes up 0.83% of the survey assemblage and 0.82% of the al-Mataf assemblage meaning that 5 or 6 sherds would have been expected at Area 74. For LQC, WPINK, and CP1.5, it is not statistically possible to be certain of the absence from Area 74, but for these there is also evidence of decline throughout the al-Mataf sequence indicating that the lifespan of the type or class had ended before al-Mataf was abandoned (Table 7, Table 8, Table 21). It is therefore these classes and types, together with CP1.2, which can be taken as reliable al-Mataf period 'type fossils' (Table 13). Forms B1.1, B1.4 are not common enough at al-Mataf to be certain that their absence from Area 74 is significant. However, there are stylistic reasons to believe that they are datable to the al-Mataf period.

Class name	Class	al-Mataf 'type fossil'?
Persian Blue Speckled	PERSIA	Yes
Longquan Celadon	LQC	Yes
Pink and White	WPINK	Yes
Lime-tempered	LIME	Yes
Julfar-ware type	CP1.2	Yes
Julfar-ware type	CP1.5	Yes
Julfar-ware type	CP2.1	Yes
Julfar-ware type	CP2.2	Yes
Julfar-ware type	J2.1	Yes
Julfar-ware type	B1.1	Possible
Julfar-ware type	B1.4	Possible

Table 13: Al-Mataf type fossils.

It is worth making two further observations in relation to the Area 74 assemblage. The first is that CP5.1 is well represented, whereas it is often absent on sites where CP4 rims are found. As there is evidence that Area 74 was occupied during the period immediately after the abandonment of al-Mataf, there is a possibility, which is also suggested by surface collections from other areas, that CP5.1 represents an intermediate stage between CP1.1 (typical of later al-Mataf) and the post-al-Mataf CP4 rims. This is a rather tentative suggestion that needs to be checked by excavation or further surface collections. In addition it is notable that KHUNJ is by far the most common glaze ware, making up 15.72% of the Area 74 assemblage, compared to 0.45% at al-Mataf. Although the collection strategy at Area 74 was selective, this large difference suggests that KHUNJ became much more common after the 16th century.

Beyond Ras al-Khaimah

In addition to the material from Ras al-Khaimah, reference is made throughout this study to a number of excavated and surface ceramic assemblages from sites around the Gulf. The most significant of these are listed below together with some comments on their dating and significance.

Al-Ali (Bahrain)

Refs: Sasaki 1990. **Date range**: 9th/11th century? **Comments**: The excavators propose a 9th /10th century date, but the presence of HGRAF (fig. 4: 5, 9, 96, 8) indicates that this should be extended to the 11th century. It is also impossible to be sure that 8th century and earlier material is not present as only a selection is published.

ᶜĀrja (Suhar, Oman) Site 1 Phase A

Refs: Costa & Wilkinson 1987: chapter 9. **Date range**: Sasanian/Early Islamic? **Comments**: A small sequence of pottery. One of the contexts is dated by a C^{14} date (OM

[5] In the revision of the phasing and classification of the Kush and al-Mataf material that took place during the preparation of this book, the addition of J2.1 to the al-Mataf type fossils has added one area of the al-Mataf period total in the Shimal transect to those published in Kennet 2002a.

011) that calibrates to A.D. 430 to 620 (68%) or A.D. 260 to 290 or 320 to 680 (98%). A selection of only seven sherds from the assemblage is illustrated, together with a brief catalogue (fig. 93, table 17). The authors suggest that this assemblage is of late Sasanian or very early Islamic date. The assemblage is too small to assess with confidence, but it does not compare with the Sasanian and Early Islamic material from Kush and may be of 8th century or later date. It is possible that the small sample of carbon from which the C^{14} date was taken is residual or is inaccurately dated (table 14).

ᶜĀrja (Suhar, Oman) Site 1phase B, Sites 42/43, Water Mill

Refs: Costa & Wilkinson 1987: chapter 9. **Date range**: 9th/10th century. **Comments**: These assemblages are very useful as they allow the local coarse wares of the 9th and 10th centuries to be characterised with some confidence. The dating of these assemblages is provided by the glazed pottery and by C^{14} dates (pages 185-207).

Bahrain survey

Refs: Larsen 1983: 267-293. **Date range**: All periods. **Comments**: Mostly surface collection material with no independent dating evidence. One small excavated sequence from Qalaᶜat al-Bahrain is presented that provides a simple sequence (pages: 252-254).

Barbar (Bahrain)

Refs: Frifelt 2001: 13-33. **Date range**: 9th/10th century. **Comments**: There is no independent dating evidence. The pottery is predominantly datable to the 9th and 10th century, though some later material is also present (e.g. fig. 11).

Bushire (Iran)

Refs: Whitehouse & Williamson 1973: 35-39. Whitcomb 1987. **Date range**: Sasanian, 9th/10th century and later. **Comments**: Surface collections from sites on the Bushire peninsula. Some sherds are dated to the Sasanian period based on parallels with Jazirat al-Ghanam and al-Dūr. FOPW is also reported. Some of the assemblages are potentially useful associations of Sasanian and Abbasid pottery.

Al-Dūr Area F (UAE)

Refs: Lecomte *et al.* 1989. Lecomte 1993. **Date range**: Sasanian 3rd & 4th century. **Comments**: Useful chronologically-constrained assemblage. Important for the dating the early Sasanian period (PIR D) but the absolute dating evidence is not very precise.

Eastern Province Survey (Saudi)

Refs: Potts *et al.* 1978. **Date range**: All periods. **Comments**: Surface collection material, no independent dating evidence.

Gubayrah (Iran)

Refs: Bivar 2000. **Date range**: All periods. **Comments**: Excavated material with no independent dating evidence or usable stratigraphic association. Only a selection of the pottery excavated at the site is presented.

Hājīābād (Iran)

Refs: Azarnoush 1994. **Date range**: 4th/5th century? **Comments**: A useful chronologically-constrained Sasanian assemblage, although the date of the end of occupation, which is based only on the lack of recognisable Islamic ceramics, is too imprecise and needs to be reconsidered. The lack of FOPW may be a regional phenomenon.

Al-Hasa Oasis (Saudi)

Refs: Whitcomb 1978. **Date range**: All periods. **Comments**: Surface collection material. No independent dating evidence. Whitcomb attempted a seriation of these assemblages but the full analysis is not presented.

Jazirat al-Ghanam (Oman)

Refs: de Cardi 1972. de Cardi 1975: 54-59. **Date range**: Sasanian. **Comments**: Surface collection with no independent dating evidence. FOPW is present, as is TURQ and LISV. The quantity of the latter might suggest a date slightly later than the published Tepe Yahya material. The apparent absence of TURQ type 94 might suggest a date as late as KUSH Period III but this is contradicted by the presence of FOPW.

Mleiha (UAE)

Refs: Benoist *et al.* 2003. **Date range**: Sasanian. **Comments**: This is a useful chronologically-constrained assemblage dated by the excavator to between the 2nd and the 4th century based on the pottery, it may be possible to refine these dates in the future.

Oman Survey

Refs: Whitcomb 1975. **Date range**: All periods. **Comments**: Surface collection material, no independent dating evidence.

Pasargadae (Iran)

Refs: Stronach 1978: 157-159, figs 123, 124. **Date range**: Sasanian/Early Islamic. **Comments**: A small amount of post Achaemenian pottery was found in three areas at the Tall-i Takht. This material was dated by Stronach to the 7th and 8th centuries based on the lack of associated glazed pottery and unpublished parallels with Naqsh-i Rustam and Istakhr, but it could also be earlier.

Qala^c^at al-Bahrain

Refs: Frifelt 2001: 35-142. **Date range**: 14^{th} - 16^{th} century. **Comments**: Most of the illustrated pottery is datable to between the 14^{th} and 16^{th} century, although there is also some earlier material present (e.g. fig. 227). The lack of stratigraphic association severely limits the usefulness of this assemblage.

Qasr-i Abu Nasr (Iran)

Refs: Whitcomb 1985. **Date range**: 6^{th}/th, $9^{th}/10^{th}$ & $13^{th}/14^{th}$ century. **Comments**: In the Western area three distinct periods of occupation were identified ($6^{th}/7^{th}$; $9^{th}/10^{th}$; $13^{th}/14^{th}$). Very broadly these are restricted to specific areas, but earlier and later material is also present in most areas. This mixing, and the lack of stratigraphic control, forced Whitcomb to rely principally on external parallels to date the ceramics, although there are some assemblages which appear to be chronologically coherent (e.g. $6^{th}/7^{th}$ century from some areas). The same is true for the material from the fortress, which is organised stylistically, and the town. The published material is clearly a selection made by the excavators and quantification is therefore impossible. Whitcomb attempted to use seriation to elucidate a chronology, but as details of the criteria he used are not given it is impossible to evaluate.

Al-Quṣūr (Kuwait)

Refs: Patitucci & Uggeri 1985. **Date range**: 8^{th} century. **Comments**: A useful assemblage from al-Quṣūr on Failaka that can be dated principally to the 8^{th} century by the almost complete absence of 9^{th} century glazed wares and by the type of Eggshell.

Siraf (Iran)

Refs: Tampoe 1989. **Date range**: Sasanian/Early Islamic to 16^{th} century. **Comments**: This is a very important site but the publication is problematic due to inaccuracies, inconsistencies, bad organisation, and failure to present evidence to support key arguments. The material is not presented by stratigraphic association and needs to be re-analysed. There are also questions relating to the dating of the supposed Sasanian levels. There is very little post-13^{th} century material. There is further discussion of the Siraf sequence in Chapter 5.

Suhar (Oman)

Refs: Kervran & Hiebert 1991. Kervran 1996. Mouton 1992: 180-181. **Date range**: Sasanian/Early Islamic. **Comments**: Relatively little material from this important sequence is published. Kevran's dating has been revised by Mouton to between the 3^{rd} and the early 7^{th} century AD, but, as this was based partly on the dating of IRPW, it may need to be pushed later into the Islamic period (see below IRPW).

Tepe Yahya (Iran)

Refs: Lamberg-Karlovsky 1970: 6-22. **Date range**: Sasanian. **Comments**: An excavated assemblage from the two latest phases of construction at the site. Unfortunately the pottery is not quantified but appears to contain a lot of FOPW and only a small quantity of TURQ ware. These levels are dated by a 5^{th} century seal and a $3^{rd}/4^{th}$ century C^{14} date. A $4^{th}/5^{th}$ century date therefore seems likely but the absence of TURQ type 94 is problematic. There are also relatively few coarse ware parallels with Kush Periods I and II.

Williamson Collection (Iran)

Refs: Priestman & Kennet 2002. **Date range**: All periods. **Comments**: Surface collection material, no independent dating evidence. Useful reference material.

In addition there are a number of smaller assemblages from the Gulf that provide some insights into ceramic distributions (e.g. Huff & Gignoux 1978: 143-147. Højland & Andersen 1997: 213-215. Hardy-Guilbert 1991a. Morgan 1991. Ziolkowski 2002).

It will be clear from the comments above that there are almost no assemblages that are fully published with good stratigraphic associations and independent dating evidence. Indeed, it is often the fact that only a selection of material is presented that is the greatest impediment to further analysis. Nonetheless, in the future a detailed review of these assemblages may begin provide more chronological clarity, especially for the Sasanian and Early Islamic periods for sites such as Tepe Yahya, Pasargadae, Jazirat al-Ghanam, Suhar, Hājīābād, and Qasr-i Abu Nasr etc.

Chapter 3: The Pottery Classification

Classes

Altogether 106 classes of pottery were defined each of which is described and discussed below. 'Class' refers to a group of pottery with consistently similar characteristics, the concept and meaning of the term as used here is further discussed in Appendix 1. Each class has been given a code (printed in upper case letters throughout this book in order to avoid ambiguity). Some of the classes, such as LQC (Longquan Celadon) and HGRAF (Hatched Sgraffiato) are established classifications well known in the literature. Others, for example SMAG (Small Grey Vessels) and LIME (Lime-Tempered), are defined here for the first time. Table 14 lists all classes in alphabetical order based on their code. The order number refers to the order in which they are listed in this chapter.

In the descriptions below, all classes are wheel-thrown unless otherwise stated. In most cases fabric colours are described using the Munsell system (Munsell 1994), but these are missing for some of the coarse wares defined during the study of the al-Mataf assemblage when a Munsell colour chart was not available.

Class Code	Class Name	Number
BEARTH	Black-Fired Earthenware	76
BGRAF	Two-Tone Sgraffiato	13
BLACK	Black Glazed Earthenware	39
BSTONE	Light Brown Glazed Stoneware	60
BTIN	Black Decorated Tin Glaze	4
BUFF	Buff	84
BWEARTH	Blue-and-White Earthenware	38
CBW	Chinese Blue-and-White Porcelain (Jingdezhen)	64
CEL	unidentified celadon	57
CHAMP	Champlevé	16
CHANG	Changsha polychrome	46
CHIN	Unclassified Far Eastern	73
CHOC	Chocolate Chip / Black Angular Inclusions	82
CLINKY	Clinky Fired Earthenware	91
COBALT	Cobalt decorated white glaze	3
CWW	Carved White-Stoneware Lotus Bowls	51
DGRAF	Degraded Sgraffiato	15
DHM	Dehua Moulded Whiteware	52
DHP	Dehua Plain Whiteware	53
DKHUNJ	Dark Khunj	32
DUSUN	Dusun	58
EASTIN	Far Eastern White Glaze	63
EGG	Eggshell	88
EGRAF	Early Sgraffiato	8
ENAM	Enamelled Porcelain	71
FIRE	Fine Indian Red	102
FLAKEY	Flakey Earthenware	92
FOPW	Fine Orange Painted Ware	90
FRIT.B	Coarse Frit	22
FRIT.BW	Blue-and-White Frit	25
FRIT.C	Cobalt Frit	23
FRIT.DEG	Degraded Frit	26
FRIT.F	Fine Frit	18
FRIT.L	Frit Lustre	20
FRIT.T	Turquoise Frit	21
FRIT.TB	Turquoise and Black Underglaze-Painted Frit	24
FRIT.W	White Frit	19
GBSTONE	Grey-Bodied Dark-Glazed Stoneware	61
GGRAF	Monochrome Green Sgraffiato	11
GGW	Yue-type Wares	49
GMONO	Monochrome Green Glaze	35
GRE	Unidentified Greenware	50
GWW	South Chinese White Stoneware (Song)	48

HGRAF	Hatched Sgraffiato	9
HONEY	Honeycomb	80
HONEYF	Honeycomb Fabric	81
IMITCEL	Imitation Celadon	40
INDIA	Unclassified Indian Ware	106
IRAB	Indian Red & Black	103
IRONGL	Iron Glazed Storage Jars	43
IRPW	Indian Red Polished	100
JULFAR	Julfar Ware	74
KHUNJ	Khunj or Bahla Ware	31
KRAAK	Kraak or 'panelled wares'	68
LGJARS	Large Glazed Jars	17
LGREEN	Light Green Glaze/Creamy Imitation Celadon	33
LIME	Lime-Tempered	79
LISV	Large Incised Storage Vessels	77
LQC	Longquan Celadon	55
LSANDY	Large Sandy White Storage	86
LUSTRE	Lustre	7
MGPAINT	Manganese Purple Underglazed-Painted	27
MGRAF	Monochrome Mustard Sgraffiato	12
MGTURQ	Turquoise & Manganese	29
MOD	Modern Porcelain	72
MOTTLE	Mottled Green Monochrome	42
MTB	Martaban	59
MUSTARD	Mustard Glaze	34
NONCHIN	Non Chinese Porcelain	65
PAINT	Painted Indian Earthenware	104
PERSIA	Persian Blue Speckled	30
PGRAF	Polychrome Sgraffiato	14
POLY	Polychrome Glazed	69
PROTO	Proto Julfar	87
RBSLIP	Red-Black Slip	78
RED.EGG	Red Eggshell	89
REDSPECK	Red Speckled Ware	97
REDYEL	Red and Yellow	36
RSLIP	Coarse Red-Slipped	105
SBBW	Black Burnished Ware	101
SCHINA	Thai or South-China Celadons	56
SMAG	Small Grey Vessels	94
SPLASH	Splashed	5
SPOT	Spotty Ware	95
SWATOW	Swatow	67
THIN	Thin Black	85
TORP	Torpedo Jars	93
TURQ	Turquoise Glaze	1
UNCLASS-G	Unclassified Glazed	44
UNCLASS-U	Unglazed Unclassifiable Sherds	98
UNDERGL	Underglaze Painted Earthenware	41
UNIQG	Unique Glazed	45
UNIQU	Unique Unglazed Sherds	99
VIET	Vietnamese Blue-and-White	66
VPOLY	Vietnamese Polychrome	70
WAPO	Cream Pots with Incised Wavy Decoration	96
WHITE	White Ware	75
WHT	Unidentified Whiteware	54
WILLOW	Willow Pattern	37
WPINK	Pink & White	83
WPORC	White Porcelain	62
YBTIN	Plain Opaque White Glaze	2

YEMEN	Yemeni Yellow	28
YGRAF	Yellow Sgraffiato	10
YSPLASH	Bright Yellow Splash	6
YUEC	Yue Ware	47

Table 14: Index of pottery classes used in this study.

Types

Classes are the principle method of pottery classification in this study but a typology was established for all rims, bases, and handles and the types were recorded in the database. Only a selection of key types are illustrated and discussed in this study. They are discussed and described under the classes within which they occur. A more detailed analysis of types is currently in progress and will be included in the final site publications.

Glazed Classes

Although glazed classes make up only about 6.5% of the pottery assemblages from both Kush and al-Mataf they are largely, if not exclusively, imported and are currently more useful as dating tools than most local or imported unglazed wares because they are better studied. They therefore take up a disproportionate amount of space below as the chronology of the Kush and al-Mataf sequences depends largely on them.

Alkaline Glazed Classes

1. **TURQ** (Turquoise Glaze)

Definition and description: This class is covered in a monochrome alkaline glaze that varies from pale yellow through green to turquoise. The clay is variable, most commonly being a grainy, quartz-rich, light-coloured fabric, which almost resembles frit in some cases. Fabric colour is most commonly a pale yellow (Munsell 2.5Y 8/4). The alkaline glaze tends to be unstable and degrades easily; it does not always cover the entire vessel, in some cases being restricted to the interior and the rim. Incised decoration consisting of horizontal wavy lines is sometimes found. Vessels are predominantly small bowls and large jars although some larger bowls also occur.

This class is very abundant in the lower phases of the Kush sequence. The chemical instability of the glaze and its tendency to fall off, exfoliate, and discolour often make it difficult to classify with any degree of confidence. TURQ needs to be subdivided if it is to be of any use as a chronological indicator. It was subdivided on the basis of the tint of the glaze and the fabric into the following groups:

TURQ.1 - With a mustard-yellow glaze that looks and feels like fine sandpaper (2.5Y 6/8). The pale yellow (2.5Y 7/3) fabric is harder fired than TURQ.2 and contains fine sand inclusions.

TURQ.2 - With a white glaze and a soft yellow body. The glaze tends to a yellowish tint (5Y 8/1 - 5Y 8/3). The pale yellow (2.5Y 8/4) fabric breaks without a snap; frequent small air holes but no sand.

TURQ.3 - White glaze with a variable, sandy, harder fired body. This group is a later development in the chronological sequence and shows a wider degree of variability than TURQ.1 and 2. The light yellowish (10YR 6/4) body is normally quite hard fired and breaks with a snap. The glaze is a similar colour to TURQ.2.

TURQ.4 - Green tinted glaze. The glaze tends to be quite thick and well preserved. It has a slightly milky-green tint. The body is pale yellow (2.5Y 8/4 - 5Y 7/3).

TURQ.5 - Blue glazed. This subdivision has a more robust glaze that has a deeper blue tint (perhaps because it is well preserved). It occurs only in the later phases at Kush. The body is similar to TURQ.4. Appliqué decoration is sometimes applied to this subdivision.

TURQ.NRE - This material was not re-examined during the final reclassification. It was not subdivided according to the scheme above. Most of the sherds were from small vessels similar to TURQ.4. They occur mostly in Phases E-03 and E-04 at Kush and, had they been catalogued, they might have increased the relative proportion of TURQ.4 in the middle of the sequence.

Body type: Earth **Origin:** Central and/or Southern Iraq

Fig: Fig. 5.

Parallels & external dating evidence: This class is part of a long tradition stretching back to at least the 3rd century B.C. in the Gulf (Mouton 1992: 148. Salles 1984: 248-50), and much earlier in Mesopotamia (Moorey 1994: 159-162). The tradition continued into the Sasanian period when it possibly began to be more thickly glazed (Simpson 1992: 299-301). In the Gulf the class is abundant on a number of Islamic period sites such as Siraf (Tampoe 1989: figs. 45-47), al-Quṣūr (Patitucci & Uggeri 1985: fig. 92), and A'Ali (ᶜAlī) (Sasaki 1990: 114. figs. 2 & 3). At Susa the sequence shows clearly that it was in use until the end of the 9th century (Kervran 1977: fig. 25 152). It has also been found at sites such as Shanga in East Africa. Horton points out that the absence of TURQ from Ras Hafun suggests that it may not have circulated this far until the 7th century or later

	I	II	III	IV	V	VI	VII	VIII
TURQ								0.04
TURQ.1 Yellow glaze	2.22	0.82	0.18	0.29	0.12		0.04	0.03
TURQ.2 White glaze & soft body	8.92	0.95	0.53	0.43	0.47	0.07	0.16	0.2
TURQ.3 White glaze & hard body	0.88	2.11	1.4	1	1.42	0.51	0.68	0.54
TURQ.4 Green tinted glaze	1.28	1	0.69	0.22	0.09	0.41	0.48	0.35
TURQ.5 Blue glaze		0.08	0.1	0.07	0.19	0.17	0.28	0.28
TURQ.NRE	0.09	0.53	0.61	0.11	0.02	0.07		0.07

Table 15: Sherds of TURQ by Period (as % of total Period assemblage by sherd count).

(Horton 1996: 274-277), although the material at Aksum argues for circulation in the Red Sea before 630 (Munro-Hay 1989: 315). At Shanga it was present from the beginning of the sequence in the 8th century until about 1000 (*ibid.*: 277). Some scholars have suggested that the colour of the glaze was generally lighter in the Sasanian period than previously, although it could be that this is simply a function of weathering (Simpson 1992: 301).

It is generally believed that TURQ was manufactured in southern Iraq, possibly in the vicinity of Baṣra, though it is possible that other production centres existed (Mason & Keall 1991: 52). It has a wide distribution around the Indian Ocean as far as Japan (Glover 2002).

TURQ with appliqué decoration is normally dated to the 8th/9th century (Whitehouse 1979b: 881. Mason & Keall 1991: 52).

Types: An examination of the most common rim types defined for this class by Period (Table 16) reveals that Type 94 is clearly restricted to Periods I and II - later examples are almost certainly residual. Types 62 and 64 show a similar pattern, but less convincingly. Although only a few examples occur, Type 72 is found only in the abandonment deposits of Period III.

TYPE/PERIOD	I	II	III	IV	V	VI	VII	VIII
94	67	10	1		3			
62	7	5	2	1			1	2
64	3	2		2				1
25	1	5	2					1
33	5	1	4	1	4	2		6
72			5					

Table 16: TURQ types through the Kush sequence by sherd count. Grey areas show suggested coherent life spans. The table includes only common types.

The most common types are shown in **Fig. 5**.

Type 25 Bowl with a simple, rounded rim.

Type 33 A small version of type 25, the distinction is not always easy to make and it is possible that types 25 and 33 are the same.

Type 62 Fine, curved-wall bowl with a slightly thickened, upward-pointing rim. Similar to type 94 but lacking notch.

Type 64 Thick-walled jar with a vertical rim which is squared, everted, and often troughed on top. A band of cordon decoration is sometimes present just below the rim. Shows considerable variation.

Type 72 A small bowl with a distinctive thickened carination just below the rim. This form is very common at the site of al-Quṣūr in Kuwait, which is dated to the 8th century (e.g. Patitucci & Uggeri 1985: fig. 93 forma 1). However, it also seems to occur on earlier sites in Mesopotamia such as Tell Songor (Kamada & Ohtsu 1988: fig. 15 34).

Type 94 Bowl with a rim that is troughed on the interior giving a very distinctive form. This type is commonly found at al-Dūr and nearby Gallah in contexts datable to the 3rd/4th century (Lecomte 1993: fig. 3 2 - 6. Mouton 1992: fig. 108 2-6 10, 136 3-4).

In addition one 'fishplate' occurred in Period I.[6]

Internal dating evidence: TURQ was very abundant at Kush in Period I and less abundant in Period II (4th/5th to 7th/8th century), after which time it appears to have made up an increasingly small percentage of the assemblage (**Fig. 6**). Sherds of TURQ also occurred at al-Mataf in Phases I, II and III of the Mosque suggesting that it continued in use in a limited way until about the 15th century.

Discussion: Table 15 shows how the subdivisions are distributed throughout the sequence. In Period I TURQ.1 and TURQ.2 predominated, whilst after Period II the quantity of TURQ declined very sharply and the harder-bodied TURQ.3 and TURQ.4 predominated.

TURQ has a history going back to the 3rd century BC in the region. It occurs in all phases at Milayha and al-Dūr (Mouton 1992: 40-1, 65-6, 94-7, 127-8 '*céramique à glaçure*'). According to Mouton, in the PIR.A (3rd century BC to first half of 2nd BC) it made up less than 1% of the total assemblage, in the PIR.B (second half of 2nd century BC to 1st century BC) this had risen to nearly 10% and by PIR.C (1st to 2nd century AD) to 17%, although Rutten has a figure of over 30% for the same period (de Paepe *et al.* 2003: 209). Mouton gives no

[6] On fishplates see Hannestad 1983: 28-32 & Mouton 1992: 65, 95, 127 (*plats à poisson*).

	Milayha & al-Dur				Kush							al-Mataf (Mosque)		
Phase	**PIR.A**	**PIR.B**	**PIR.C**	**PIR.D**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**I**	**II**	**III**
%	<1	10	17 (30?)	?	13.40	5.49	3.51	2.12	2.33	1.24	1.64	1.06	0.16	0.07

Table 17: The occurrence of TURQ through the Milayha, al-Dūr, Kush and al-Mataf sequences (3rd century BC to c. 15th century AD).

figure for PIR.D (c. 225 AD to first quarter of 4th century AD) but remarks that it was '*trés fréquente*'. This was probably its apogee, because by Period I at Kush it had declined slightly to 13.4% and then underwent a fairly rapid decline, finally dying out in Phase III at al-Mataf. The overall picture is set out in Table 17.

In the early phases it appears to have consisted mostly of bowls. By the later phases small storage jars predominate.

Samarra Horizon Classes

The following group of glazed classes constitute what is known as the 'Samarra horizon' which was a development of Islamic ceramic production that included the introduction of opacified lead and possibly tin glazes, polychrome decoration, and distinctive new vessel forms including bowls with flaring rims (Northedge & Kennet 1994). Much of the material may have been produced in the vicinity of Baṣra in southern Iraq (Mason & Keall 1991: 61), although the homogeneity of petrofarbics and clay composition across the Mesopotamian alluvium must be acknowledged as a problem for fine sourcing.

The dating of the Samarra horizon has been much discussed. It is now accepted that the dating suggested by the Tell Abu Sarifa sequence is too early and that intrusive stratigraphy has confused the issue at that site (Adams 1970: 91). Kervran's mid-8th-century date for the introduction of the horizon is based on three isolated coins in the Susa sequence and is also probably too early (Kervran 1977). Siraf yielded large quantities of Samarra-horizon classes from stratified contexts (e.g. Tampoe 1989. Whitehouse 1979a), but the dating of the Siraf material depends upon whether or not the Samarra-horizon classes occurred in the platform fill of the period-1 mosque; a deposit which is dated to 803-4 by a number of lead coins (Allen 1982: 188-9). Whitehouse states that the relevant classes were absent from this fill (Whitehouse 1969: 45-6. 1970: 6. 1979a: 52), a point he has personally confirmed to the present author, but, because of an error on the pottery-recording cards used at the site, the first Siraf interim report did record their presence in those contexts (Whitehouse 1968: 15). The early dating proposed by Tampoe is based upon the same erroneous pottery-recording cards as Whitehouse's 1968 statement and should be disregarded (Tampoe 1989: 88). The Siraf evidence therefore suggests that the Samarra-horizon classes were not in general circulation at Siraf much before 803-4 or they would have been present in the massive platform fill. However, Whitehouse's (1979a: 56) revised date of post-850 for their introduction is unsupported by any evidence and is contradicted by the results of surface survey at Samarra (below).

The Siraf and Susa sequences both suggest that the introduction of the Samarra horizon can be broken down into stages (Whitehouse 1979a: 54. Kervran 1977: 152). Analysis of large-scale surface pottery collection from Samarra gives a similar picture (Northedge & Kennet 1994. Northedge 1996). Whitehouse suggests the horizon can be broken down into three phases, whilst Kervran suggests four or more. Table *18* correlates the evidence from three sites, Siraf, Susa, and Samarra.

Surface pottery collection from areas of Samarra that are dated by historical evidence has recently improved our understanding of the chronology of the horizon (Northedge 1996). It hinges on the establishment of a short-lived city at al-Qātūl to the south of Samarra in 835-6 AD; the foundation of Samarra in 838 AD; the occupation of al-Mutawakkiliyya between 859 and 861 AD; and the end of occupation over large parts of Samarra between 885 and 895 AD (Northedge 1996: 231-235). The dating of the relevant classes is summarised in Table 19.

Siraf Whitehouse 1979a: 51-56 & 59.		**Susa** Kervran 1977: 152-3.		**Samarra** Northedge & Kennet 1994: 23-34.		
1	COBALT YBTIN (White)	1	COBALT (*email blanc a décor cobalt*)	1	COBALT	after 803-4 , before 835-6 AD
		2	YBTIN (*email gris*)	2	YBTIN (White) SPLASH	after 835-6 and before 861 AD
2	SPLASH	3	SPLASH (*glacure jaspée*) LUSTRE (*lustre jaune/roux*)			
3	LUSTRE EGRAF (Style 1 Sgraffiato)	4	EGRAF (*sgraffito jaspée*)	3	LUSTRE EGRAF (Sgraffiato)	after 885-895 AD

Table 18: Stages of the introduction of the Samarra horizon (Tampoe 1989: fig. 113a has been disregarded due to the mosque I platform problem).

Class	Date of introduction (AD)	Date of demise (AD)
White-glazed ware with cobalt decoration (COBALT)	after 803-4 / before 835-6	out of use by 838?
Plain opaque white glaze (YBTIN)	after 835-6 / before 861	?
Splashed ware (SPLASH)	after 835-6 / before 861	?
Monochrome lustre (LUSTRE)	after 885-895	?
Early sgraffiato (EGRAF)	after 885-895	?

Table 19: Summary of the dating of the principle Samarra horizon classes (after Northedge and Kennet 1994 & Northedge 1996).

The most common 'Samarra horizon' types are shown in **Fig. 7**.

The sequence of classes in Table 18 is probably the same; the differences can be explained by the phase chronology. In the Kush sequence, however, COBALT appears after YBTIN. This might agree with the Siraf sequence but certainly differs from Susa and Samarra. This could be explained by regional variations, but could also be due to the fact that YBTIN, being considerably more abundant at Kush, is more likely to occur in relatively small assemblages, thereby skewing the picture. However, it is interesting to note that in Tampoe's revision of Whitehouse's three-stage Samarra horizon, she notes that COBALT was quite rare at Siraf and most of it appeared a later in the sequence than the Opaque white glaze wares (YBTIN) (Tampoe 1989: 90). The primacy of YBTIN, both chronologically and numerically, may therefore be a specific feature of the Gulf.

The later three classes, SPLASH, LUSTRE, and EGRAF hardly appear at all at Kush, despite the fact that they are all found at nearby Hulaylah and other sites in Ras al-Khaimah (Kennet 1994: wares 18 a-f, 24, 41). This may indicate a period of limited activity or abandonment Kush that began, if we accept Northedge and Kennet's dating, between 834-5 and 861 AD and lasted into the 10th century.

2. **YBTIN** (Plain Opaque White Glaze)

Definition and description: This class has a fine, pale yellow body and occurs in fabrics 6 and 7. The forms are always thin-walled bowls with flaring rims. The bowls are glazed on both the interior and exterior with a thick grey/white glaze, which appears to be speckled with tiny black inclusions. The walls average about 6 mm in thickness. The glaze tends to detach quite easily from the body. This is closely related to COBALT to which it is identical except for the cobalt decoration.

Body type: Earthen **Origin:** Iraq

Fig.: CP. 1

Parallels & external dating evidence: As discussed above, YBTIN is thought to have been introduced between 835-6 and 861 AD and seems to have remained in use at Siraf until the mid-10th century or so (Tampoe 1989: 91). The distribution in Iran is discussed by Williamson (1987: 14-17, 21).

Types: 46 and 65 (**Fig. 7**).

Internal dating evidence: Ninety-one sherds were found at Kush from Phase E-05 onwards. The class is most common between Phases E-05 and E-07. It has been used to date Phase E-05 to the 9th century. Sherds in later Phases may be residual. As mentioned above, the Kush sequence suggests that YBTIN may have been in circulation before COBALT.

In Phases E-05 and E-06, fabric 6 (quartz rich) is the most common, in Phase E-07 fabric 7 (no quartz) is equally common (Table 20). This probably indicates the presence of pottery from more than one production centre, but may also indicate a development in production technology.

Fabric	E-05	E-06	E-07	E-08	E-09	E-10	E-11
6	2	20	14	3	3	2	4
7		3	12	2	1	3	12

Table 20: YBTIN fabrics 6 and 7 by Phase (sherd count).

At Hulaylah this was called ware 23 (Kennet 1994).

3. **COBALT** (Cobalt decorated white glaze)

Definition and description: The body of this class varies from yellow to a pinkish buff and can be quite coarse with air holes and small inclusions. It occurs in fabrics 6 and 7. The vessels are completely covered with a thick, white glaze decorated with patches of cobalt blue or blue-green, the edges of which have smudged slightly giving the effect of ink on snow, as noted by Lane, who called it 'tin-glazed painted ware' (Lane 1947: 13, pls. 8 & 9 esp. 8B). The blue colour tends to be quite thick, forming a noticeable lump. The forms are most often bowls but one closed form was noted.

Body type: Earthen **Origin:** Iraq

Fig.: CP. 2.

Parallels & external dating evidence: It is generally agreed that this is one of the earliest classes of the Samarra horizon (Kervran 1977: 152. Whitehouse 1979a: 51-56). COBALT was not in circulation by 803-4 AD according to the evidence from Siraf; it does not occur in the main city area at Samarra but has been found at the site of Qātūl, which was occupied by al-Mu^{c}tasim in 835-6 AD (Northedge & Kennet 1994: 25). This implies that it must have gone out of use before the founding of Samarra in 838.

Internal dating evidence: Eighteen examples were found at Kush in Phases E-06 to E-08, with one probably residual example in Phase E-11. The presence of COBALT can be used to argue for an early 9th-century date for Phase E-06. At Hulaylah this was called ware 20 (Kennet 1994).

Types: 46 and 61 (**Fig. 7**).

Discussion: COBALT is much less abundant at Kush than YBTIN which may be due to the chronology of the site, or the distribution of the class. YBTIN appears earlier in the sequence than COBALT unlike the Susa and Samarra sequences.

4. **BTIN** (Black Decorated Tin Glaze)

Definition and description: Fabric 6. Similar to YBTIN and COBALT in form and technique. The glaze, which covers the interior and the exterior of the vessel, is decorated with patches of black that might be the degraded remains of another colour.

Body type: Earthen **Origin:** Iraq

Parallels & external dating evidence: Closely related to COBALT.

Types: 46 (**Fig. 7**).

Internal dating evidence: Three examples were found at Kush in Phases E-06 and E-08. It has been used to suggest a 9th century date for phase E-06.

5. **SPLASH** (Splashed)

Definition and description: This class consists of thin-walled bowls with a pure, off-white to buff body, glazed on both the interior and the exterior. The decoration is extremely variable and infinitely sub-dividable. It consists of undefined areas of green, brown and yellow splashes with green often being the predominant colour.

Body type: Earthen **Origin:** Iraq?

Parallels & external dating evidence: This is a difficult class to define as it is so varied. The term 'splashed' is often used very loosely in the art-historical literature to describe pottery as late as the 11th century but has rarely been properly defined and classified (Northedge & Kennet 1994: 33). Here SPLASH refers to the ware that Kervran calls *glacure jaspée* at Susa (Kervran 1977: 152), and Whitehouse calls 'pottery with transparent glaze and splashes of green, yellow-brown, and...purple' (Whitehouse 1979a: 50). It is an established part of the Samarra horizon, it is common in Iraq and has been found around the shores of the Gulf and Arabian Sea (e.g. Horton 1996: 279, group 4. Sasaki 1990: 114-6).

Surface collections at Samarra have demonstrated that SPLASH is not found at al-Qātūl which was occupied in 835-6 AD, but is present at the site of al-Mutawakkiliyya which was occupied for a very brief time between 859 and 861 AD (Northedge & Kennet 1994).

Internal dating evidence: SPLASH was not found at Kush but was common in the Abbasid areas at Hulaylah (Kennet 1994: ware 24).

Discussion: The absence of SPLASH from Kush might suggest abandonment or only limited activity at the site in the late 9th to 10th century.

6. **YSPLASH** (Bright Yellow Splash)

Definition and description: This is a thick-bodied (7 - 8 mm) ware that is glazed, slipped and decorated on the interior and most of the exterior down to the base. The class has a very distinctive look, the glaze is quite unstable and has degraded to a powdery white, yellow, and green, which originally seem to have formed splash decoration. Fabric 3, quite hard fired.

Body type: Earthen **Origin:** Iraq

Parallels & external dating evidence: As for SPLASH. Kervran notes a class of decoration described as 'Coulures [sic] vert/jaune/brun' to which these sherds might be related (1977: 152).

Internal dating evidence: Twelve examples were found at Kush from Phases E-06 to E-09, and E-11 (9th to 12th century). Many of the sherds may come from a single vessel.

Discussion: Badly degraded and difficult to define. It is not clear if this is a coherent class, or the result of one or two vessels.

7. **LUSTRE** (Lustre)

Definition and description: Two sherds of earthenware monochrome lustre were found in the Abbasid areas at Hulaylah (Kennet 1994: ware 41). They were both small fragments with thin, white or creamy bodies (3-5 mm) and extremely thick opaque glazes decorated with yellow monochrome lustre decoration, painted on both sides in one case and on the interior only in the other. The form, technique, and fabric are similar to YBTIN.

Body type: Earthen **Origin:** Iraq

Parallels & external dating evidence: Along with splashed classes monochrome lustre is one of the later developments of the Samarra horizon (e.g. Kervran 1977: 152), and it has been suggested that it was not introduced until the 10th century (e.g. Whitehouse 1979a: 16. Hansman 1982). Surface collections at Samarra show that polychrome lustre is present across most of the site whilst monochrome lustre is completely absent. The introduction of monochrome lustre should therefore probably be dated to after the main depopulation of Samarra, which took place between 885 and 895 (Northedge & Kennet 1994: 29-33).

Internal dating evidence: LUSTRE does not occur at Kush, although it has been found at Hulaylah (Kennet 1994). This probably reflects a lack of settlement at Kush in the late 9th /early 10th century.

Discussion: Mason and Keall have demonstrated that lustre was manufactured at Baṣra (Mason & Keall 1991: 61). It is interesting to note that monochrome lustre was common at Shanga on the East African coast. Horton noted this fact and contrasted it with the relative rarity of lustre at Siraf, speculating that Shanga obtained its lustre directly from Baṣra (Horton 1996: 279).

Sgraffiatos

'Sgraffiato' describes the decorative technique of incising linear designs through a white slip before glazing. Most often, especially in the later periods, the slip is white or cream and the body is red, causing the incisions to stand out as a darker colour. The pattern created by the incised lines is sometimes filled with patches of coloured glaze - green, brown, and yellow.

The sgraffiato technique seems to have begun in southern Iraq in the early 10th century, possibly under the influence of Tang imports, but manufacturing centres were established all over Iran and Afghanistan by the 11th century (Morgan 1994a). By the 12th century the technique had become the most widespread and common of the Islamic ceramic traditions: it is found in Egypt, Syria, Northern Iraq, Central Asia and Byzantium and entered the European tradition through Northern Italy in the early 13th century (e.g. Berti & Tongiorgi 1981: 277-281, pl. CCX-CCXVIII).

Sgraffiato is therefore a long-lived and widespread tradition, which can be subdivided into a number of lesser traditions with a more limited geographical and chronological range, based on the style of decoration, fabric, and technique of manufacture. Although it is difficult to relate fragmentary archaeological material to the imprecisely defined categories into which sgraffiato is usually divided in the art-historical literature (e.g. Soustiel 1985: 72-74), there are often clear parallels in style. As a way of explaining how such broad regional traditions can be linked to the diversity of style observable in later Iranian sgraffiatos, Morgan has proposed that a group of metropolitan styles were imitated regionally and copied locally in many small centres (Morgan 1994a: 122).

To judge by the fabrics and published parallels, most of the sgraffiatos found at Kush were manufactured in Iran where production is generally thought to have been terminated by the Mongol invasions (Morgan 1991: 78). The decline of sgraffiato is discussed in Chapter 4. Sgraffiato does not occur at al-Mataf because it had completely ceased to circulate in the Gulf by the 14th century.

8. **EGRAF** (Early Sgraffiato)

Definition and description: This is a thin-walled (5 mm or less) class with good quality, compact, well-levigated clay of varying composition. The glaze is usually thin and evenly applied and can vary from monochrome green to colourless splashed with green, yellow and brown. The class is sometimes glazed on both the interior and the exterior, sometimes on the interior only. The forms are nearly always bowls. The body is normally, though in rare cases it is not. Decoration is a combination of incisions cut into the body or slip and splashes of colour in the glaze.

Body type: Earthen **Origin:** Iraq?

Fig: Fig. 7.

Parallels & external dating evidence: This class can be equated with the Siraf 'Style I', 'Early' or 'Mesopotamian' sgraffiato (Tampoe 1989: 39. Whitehouse 1979a: 50). Although sgraffiato has traditionally been regarded as one of the early Samarran classes (e.g. Sarre 1925: 71-2), surface collection at Samarra has demonstrated that it was introduced after the main period of occupation of the city, either very late in the 9th or early in the 10th century (Northedge 1985: 124. Northedge & Kennet 1994: 33-4). Both Kervran and Tampoe have suggested an earlier date (Kervran 1977: 90. Tampoe 1989: 90-94) but the Samarran evidence is stronger. Both agree with Whitehouse (1979a: 59-60) that sgraffiato is one of the later developments of the Samarra horizon.

Internal dating evidence: Only two sherds of EGRAF were found at Kush, one of which was in Phase E-09 in the phased sequence (12th century). Together with the absence of other 10th-century classes, this might suggest a period of abandonment or limited activity at Kush in the late 9th and early 10th century.

Discussion: The 29 sherds of EGRAF found at Hulaylah were subdivided into two groups based on the style of decoration (Kennet 1994: wares 18a & 18b).

18a The body is a very fine pale pink-buff colour with a conchoidal fracture and occasional small angular inclusions. The body is slipped and incised decoration is cut into the slip. Coloured decoration consists of patches of predominantly pale yellow and pale green with only occasional brown.

18b Similar to 18a except much more deeply coloured with more manganese brown. The exterior is also more decorated. The body is a slightly redder colour and it has a thicker slip.

Groups 18c, 18d, and 18f from Hulaylah may not be EGRAF.

9. **HGRAF** (Hatched Sgraffiato)

Definition and description: This is a fine-bodied (3.5 - 4.5 mm. Fabric 3) glazed and slipped earthenware. Forms are nearly all bowls with curving sides but one closed form was found. In some cases the lead glaze and white slip cover the interior and most of the exterior excluding only the base, in others the glaze and slip cover only the interior and the rim. Colours vary; they are mostly in-glaze polychrome greens and yellows with the occasional addition of brown. Some sherds are predominantly yellow whilst others are predominantly green.

The defining characteristic is the hatched filling of floral or pseudo-calligraphic motives. The incised lines are normally quite fine (0.75 mm) and closely spaced (not less than 7 - 9 per cm) but one sherd was found with thicker lines spaced at 4 per cm. The colouring of the glaze seems to bear only the vaguest relationship to the incised decoration. In most cases two parallel horizontal incised lines 5 - 8 mm below the rim on the interior define the decorated area.

Body type: Earthen **Origin:** Iran

Fig: Fig. 8, CP. 3.

Parallels & external dating evidence: This class is also known as 'Style III' or 'Late Sgraffiato' at Siraf (Whitehouse 1979a: 58) and is common in Iran and along the Gulf and Arabian Sea coasts. None of the available dating evidence is conclusive, but the weight of it suggests that Hatched Sgraffiato began to circulate during or shortly after the second quarter of the 11th century.

At Siraf Whitehouse claims its introduction post-dates a coin hoard dated to 1026/7 AD (Whitehouse 1970: 6. Lowick 1985a: 5). At ^{c}Ārja in Oman it did not occur at site 42 contexts which pre-date a C^{14} date of 970 ±70BP (AD 1000-1160 (68.2%) or 890-1230 (95.4%)) (Costa & Wilkinson 1987: 185-186, table 14). At Kilwa it occurs in levels dated 1000 to 1100 AD (Chittick 1974: 303). Tampoe claims it was present in the 'latest pre-collapse deposits in Sounding A' at Siraf which she believes can be related to the earthquake of 977 AD, but the precise details upon which Tampoe's argument is based are not given (1989: 40, 79, 90). If she is right, this would be the earliest evidence for the class. However, Hatched Sgraffiato was not present in Siraf houses N, R, and W which were also apparently abandoned immediately after the earthquake (*ibid.*: 79), suggesting that Tampoe's conclusions need further investigation before they can be accepted.

It has been suggested that production was based in southern Iran (Mason & Keall 1988: 461).

Types: 33, 36 (**Fig. 8**). Types tend to be somewhat more varied and rims more everted than EGRAF.

Internal dating evidence: Forty-seven sherds of HGRAF occurred in the phased sequence at Kush from Phase E-06 onwards, reaching a peak in Phases E-08 and E-09. It has been used to suggest an 11th century date for Phase E-06. Later sherds are probably residual. HGRAF is one of the earliest sgraffiatos to occur in the Kush sequence, preceding most other types of sgraffiato by two Phases. This reinforces the theory that the introduction of HGRAF occurred in the early 11th century. However, the sequence suggests that HGRAF stayed in circulation until well into the 12th century, which seems also to have been the case at Shanga (Horton 1996: 289).

Only two sherds of HGRAF were picked up by the 1994 Survey and one was found at Hulaylah (Kennet 1994: 18g).

10. **YGRAF** (Yellow Sgraffiato)

Definition and description: Sgraffiato with a very badly degraded glaze that now looks yellow. Only a few fragmentary sherds have been found. Most have red bodies and, so far as it is possible to tell, the glaze covers at least a part of the exterior. The style of decoration is finer and more delicate than other monochrome sgraffiatos. They are probably a rather mixed bag of degraded sgraffiatos, but they are certainly different to DGRAF.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: Sherds are too small and badly degraded to allow stylistic parallels to be found.

Internal dating evidence: Seven sherds were found in the phased sequence at Kush, almost all from Phases E-06 and E-07 (9th to 11th century). Along with HGRAF this class is one of earliest two types pf sgraffiato in the sequence.

11. **GGRAF** (Monochrome Green Sgraffiato)

Definition and description: Fabric 1. Excepting a few cases, a white-cream slip covers the interior and a 2 cm band below the rim on the exterior. The slip is covered with a green monochrome glaze. The rest of the vessel exterior is left bare. Occasionally the glaze has dribbled down the outside and in some cases there are brush strokes of glaze on the outer unslipped body of the vessel. The wall thickness is between 8 and 10 mm.

Almost all vessels are large bowls. In all cases a single or double horizontal incision runs around the interior 2 to 3 cm below the rim, and another around the centre of the bowl. The band between these lines is decorated with patterns traced in sgraffiato incisions that are about 1 mm thick. Three decorative schemes have been defined floral, swirls, and hatch; see below.

Body type: Earthen **Origin:** Iran

Fig: CP. 4, CP. 5.

Parallels & external dating evidence: The most important site for the dating of Monochrome Green Sgraffiatos is Lashkari Bazar, excavated by Gardin (1963). Gardin's pottery group XIII-1 is exactly equivalent to GGRAF (1963: pl. XXVIII 525-530). Gardin dates XIII-1 to the early part of the period 1100 to 1220 AD (1963: 136), which has since become the accepted date for the introduction of Monochrome Green Sgraffiatos. In fact all that can be said with reasonable certainty, based on the evidence that Gardin presents, is that XIII-1 was not in circulation at Lashkari Bazar until some time after 1030 AD - the date when the market appears to have gone out of use - and only one sherd of it was found in the shops in the market which were apparently re-occupied in the middle of the 12th century (Gardin 1963: 136 n.11).

Similar classes occur at other sites such as Sīrjān where 'Group 3 Type A Style I with monochrome glaze' is very similar to GGRAF, the only appreciable difference being the flat base of most vessels (Morgan & Leatherby 1987: 73-75). Morgan and Leatherby's proposed date of 950 to 1050 AD for the Sīrjān assemblage (*ibid.*: 52) places the manufacture of Monochrome Green Sgraffiato 50 years before the date suggested by Gardin. However, Morgan and Leatherby's date is not based on strong evidence and may need to be revised. GGRAF seems to have been present at Siraf but there is no related dating evidence (Tampoe 1989: 39 a).

Evidence from East Africa seems to indicate that GGRAF was in circulation before the end of the 11th century. Monochrome sgraffiatos were also found in large quantities at Shanga in East Africa (Horton 1996: late sgraffiato f, g, h). Two sherds were excavated in Trench 6-10 from phases 9 and 10 which are dated to the mid- to late 10th century (*ibid.*: Table 14). This seems too early and these sherds must be intrusive. Monochrome Green Sgraffiato was much more common at Shanga in phase 11 which 'probably lies in the 11th century' (*ibid.*: 134), which dating seems to be based on the presence of Hatched Sgraffiatos (*ibid.*: 288). The present author would suggest that the precise dating of the phase-10/11 interface in Trench 6-10 at Shanga needs to be reconsidered. The pottery described as 'green glazed with abstract decoration' which was present in layers pre-dating the Mtumbwe Mkuu coin hoard of 1066 AD or later, may be monochrome sgraffiato but this is unclear (Horton *et al.* 1986: 116). A sherd of GGRAF from layer 6 at Nzwani is associated with a C^{14} date of 920+/-50, which calibrates to AD 1030 to 1160 at 68.2% confidence (Wright 1992: 94).

Types: 25, 26, 27, 28 (**Fig. 9**).

Internal dating evidence: This is the most abundant sgraffiato class at Kush where a total of 58 sherds occur from Phase E-08 onwards where it has been used as dating evidence. Three sherds were found on the 1994 Survey.

Discussion: GGRAF can be subdivided on the basis of the decoration (**CP. 4, CP. 5**):

Floral (F) - triangles filled with wavy lines pointing towards the centre of the bowl.

Swirls (S) - loosely drawn concentric ovals and circles.

Hatch (H) - triangular panels filled with coarse cross-hatching (lines spaced at 5 mm+).

It is still unclear whether these styles have discreet chronological or regional distributions.

12. **MGRAF** (Monochrome Mustard Sgraffiato)

Definition and description: Fabric 1. This is similar to GGRAF in all but the glaze colour. The glaze is most commonly a speckled mustard yellow (2.5Y 7/8) with darker brown patches, but can also range from green to brown tint. The decorative scheme is very similar to GGRAF 'swirl' (S) decoration. The wall thickness is between 4 and 5 mm. The incisions themselves are 0.5 mm thick. The body is covered in a white/cream slip and glaze over the interior and the rim. The exterior is unglazed and unslipped.

Body type: Earthen **Origin:** Iran?

Fig: CP. 6.

Parallels & external dating evidence: This is a variation on the theme of monochrome sgraffiatos. 'Light brown' and 'yellow' sgraffiato was found at Lashkari Bazar, Shanga, Sīrjān (Gardin 1963: group XIII-2. Horton 1996: 286, j, k, l. Morgan & Leatherby 1987: 74). The dating is likely to be similar to GGRAF.

Types: 28, 25 (**Fig. 9**).

Internal dating evidence: Nineteen sherds were found in the phased sequence at Kush from Phase E-08 (late 11th century) onwards. Eight sherds were also found at Hulaylah (Kennet 1994: ware 46).

13. **BGRAF** (Two-Tone Sgraffiato)

Definition and description: This class is identical to GGRAF in all respects except in the colour of the glaze and the style of the incised decoration. The glaze is green on the rim and fades immediately to yellow (5Y 8/6). The incised decoration is located below a single horizontal line running parallel to the rim and just below it. The decoration consists of roughly triangular areas of sgraffiato 'hanging' from the horizontal line interspersed with a single, waved line running vertically. This style of decoration bears a close resemblance to that of GGRAF floral (F) decoration.

Body type: Earthen **Origin:** Iran

Parallels & external dating evidence: No precise parallels have been found in the archaeological literature; the general stylistic and technical similarities to GGRAF suggest that it must be a contemporary variant.

Types: 25 (**Fig. 9**).

Internal dating evidence: Twelve sherds occurred in the phased sequence at Kush, from Phase E-08 (late 11th century) onwards.

14. **PGRAF** (Polychrome Sgraffiato)

Definition and description: Fabric 3. Normally a thin transparent glaze with a yellowish-green tint covers a creamy-white slip. Decoration is in thin (< 0.5 mm) and sparse incisions, mostly in the 'swirl' pattern of GGRAF (S) with splashes of green, yellow, and brown, of which green is the most common. Occasionally brown and yellow are found together with no green. The glaze is sometimes better preserved in the splashes of colour. In some cases the slip appears to be absent, giving a darker background colour. In most cases the glaze is well preserved.

Body type: Earthen **Origin:** Iran

Fig: CP. 7.

Parallels & external dating evidence: Polychrome decoration is relatively rare among the later sgraffiatos; another example comes from Shanga (Horton 1996: 284 d). Superficially this class appears to have close stylistic affinities with the Siraf Style II Sgraffiato (intermediate between Style I and Style III) which was defined by Whitehouse (Tampoe 1989: 39-40. Whitehouse 1979a: 58) and the Sīrjān Style II Sgraffiato which Morgan has equated with Siraf Style II (Morgan 1994a: 121. Morgan & Leatherby 1987: 75). If this were to be true PGRAF should be dated to the mid-10th century but, although the decorative style resembles EGRAF, the red fabric, the distinctive base forms, and the fact of being slipped and glazed on the interior only are clear indications of a later date.

Types: 25, 26 (**Fig. 9**).

Internal dating evidence: Eighteen sherds of PGRAF occur in the Kush sequence from Phase E-09 onwards indicating a 12th-century or later date.

Discussion: Morgan & Leatherby's Style II Sgraffiato is glazed on both the inside and the outside as is normal with early sgraffiatos. However, the reliability of the equation of Sīrjān Style II with Siraf Style II is difficult to check as the Siraf material is not fully described by Tampoe and Whitehouse.

15. **DGRAF** (Degraded Sgraffiato)

Definition and description: This is a grouping used to describe a number of sherds of sgraffiato with a reddish, slipped body but with little or no intact glaze, making a more precise classification impossible. Fabric and form indicate that the sherds belong to one of the range of later sgraffiato classes (BGRAF, CHAMP, DGRAF, GGRAF, HGRAF, MGRAF, PGRAF, YGRAF).

Body type: Earthen **Origin:** Iran?

Types: 35 (**Fig. 8**).

Internal dating evidence: At Kush 17 sherds occur between Phase E-08 and E-11 (late 11th century and later).

16. **CHAMP** (Champlevé)

Definition and description: Fabric 1. This class includes both open and closed vessels; the open versions are glazed on the interior only, the closed are glazed over both surfaces. The glaze is transparent or slightly yellowed, and in one case green. Beneath the glaze a thick creamy-white slip has been carved away in patches or broad bands to reveal the red fabric. In some cases most of the slip has been removed. The colour scheme is reddish-brown (areas of no slip) and yellow (areas of slip).

Body type: Earthen **Origin:** Iran

Fig: CP. 8.

Parallels & external dating evidence: Champlevé is a well-established pottery style in the Islamic art-historical literature (e.g. Lane 1947: 31-35. Grube 1994: cat. 120, 121. Soustiel 1985: 67) where it is often referred to as 'Garrus' ware after a region in western Iran where it is believed to have been found (Morgan 1994a: 121-122 n. 17).

Lane originally proposed a 12th/13th-century date for the technique (Lane 1947: pls. 32b & 33b) although some scholars have argued that it occurs from the beginning of the 11th century (Grube 1994: 115-116). There are no dated examples in museum collections. The most useful archaeological context is the Serçe Limani shipwreck excavated by George Bass off the western coast of Turkey, which is dated to the 1020's AD by coins and weights (Jenkins 1992). It is of course possible that the technique began to be used in the Mediterranean earlier than in Iran. It has only rarely been reported from properly excavated archaeological sites; it occurred at Shanga in phase 11 of Trench 6-10, which has been dated to the 11th century (Horton 1996: 284 b, fig. 14).

Internal dating evidence: Champlevé is not common at Kush; only seven sherds occur within the phased sequence. It first appears in Phase E-10, which can be dated to the 13th century or later. It may be significant that Champlevé does not occur in earlier Phases, but the small amount of material means that such absences may not be representative.

17. **LGJARS** (Large Glazed Jars)

Definition and description: Fabric 1. Large, thick walled (8 - 12 mm) jars with clear turning ridges visible both inside and outside. They are covered inside and outside with a clear, patchy, brown or green glaze that is often heavily crazed. Although there is no sign of sgraffiato decoration and most examples are not slipped, the body, technique and colour of glaze are very suggestive of the later sgraffiato classes (e.g. GGRAF).

Body type: Earthen **Origin:** Iran

Parallels & external dating evidence: No parallels known.

Internal dating evidence: Eleven sherds occurred in the phased sequence at Kush, one in Phase E-08 (late 11th century) and the rest in Phases E-10 and E-11 (13th century and later). Unphased material suggests that LGJARS became increasingly common towards the very end of the Kush sequence.

Frit or Stone-paste classes

A frit or stone-paste is a body made of ten parts ground quartz combined with one part clay and one part ground glass (Allan 1973: 173). There is still disagreement over the origins of this technique: in a recent summary Morgan argued that there is evidence, both archaeological and historical, to suggest that frit was first developed in Iran in the 10th century (Morgan 1994b: 155-6). Morgan published a fragmentary Iranian frit vase in the Khalili collection, which is dated by an inscription to 1139-40 and is thus the earliest securely dated frit vessel anywhere in the Islamic world (*ibid.*). Morgan's views go against an increasing acceptance amongst scholars that Egypt was the place of origin (e.g. Contadini 1998: 73. Porter & Watson 1987. Tonghini 1994: 249). Mason has argued that the technique of using ground glass in a clay body developed in Baghdad as early as the 9th century and that it developed into the true stone paste technique in Egypt in the mid-11th century (Mason 1997: 133. Mason & Tite 1994).

The frits found at Kush are quite distinct from those found at al-Mataf. Those from Kush are much finer-bodied, straight-sided bowls with simple pointed rims and high ring-bases – all forms that do not occur in contemporary earthenwares (**Fig. 10** types 43 and 47). Most are covered with a monochrome glaze, sometimes with ill-defined patches of colour, although in the later phases a few lustre- and cobalt-decorated sherds appear (FRIT.F, FRIT.T, FRIT.C, FRIT.W, FRIT.L). By contrast, the decoration of the later al-Mataf frits is much more complex and includes underglaze cobalt or manganese painting, sometimes in apparent imitation of Chinese blue-and-white porcelain (e.g. FRIT.TB, FRIT.BW, FRIT.DEG). The al-Mataf frits are thicker walled, consisting of heavier bowls and plates with predominantly flaring rims of types that also occur in contemporary earthenwares (**Fig. 10** types 101, 111, 112). This range of types is well known from fifteenth and sixteenth century ceramics from Iran (Golombek *et al.* 1996 fig. 5.2).

These developments are very similar to those of Syrian frits. In Syria 12th-century frits (normally described as 'Tell Minis ware' or *Faïence locale ancienne*) and the later 12th/13th-century underglaze-painted frits (normally described as 'Raqqa ware' or *Faïence de Raqqa*) can be subdivided along similar lines (Tonghini 1994). However, in Ras al-Khaimah the introduction of underglaze-painted frits does not occur until after the foundation of al-Mataf in the early to mid-14th century, which is more than a century after the advent of 'Raqqa ware' in Syria.

So far as it is possible to tell from the limited evidence available, Iranian frit followed a broadly similar pattern of stylistic development to Syrian (e.g. Morgan 1994b: 156. C.K. Wilkinson 1973: 282, nos. 33a-38), but precise archaeological information on the development of Iranian frits is almost non-existent. As the frits in Ras al-Khaimah are almost certainly of Iranian origin, the Kush/al-Matāf sequence throws important light on the development of Iranian frit and confirms the broad similarities to Syrian developments. The post 1300 AD dating of the introduction of underglazed-painted frit suggested by Kush and al-Mataf might be a very localised phenomenon, or it might be indicative of wider differences between Syria and Iran.

The forms, technique, and decoration of the frits at Kush are quite distinct from contemporary earthenware glaze classes. By contrast, at al-Mataf the decoration and forms of the frits are almost indistinguishable from earthenware.

Types: Types 43, 47, 101, 111, 112 (**Fig. 10**).

The following classes were subdivided on the basis of the glaze colour and style of decoration.

Kush Frits

18. **FRIT.F** (Fine Frit)

Definition and description: These vessels are fine walled (3 - 4 mm) bowls with ring bases. The glaze covers the interior and the exterior down to the base. In all cases the glaze is badly degraded and has become iridescent and unstable.

Body type: Frit **Origin:** Iran?

Parallels & external dating evidence: See the general introduction to frits (above).

Internal dating evidence: Twenty-six sherds were found in the phased sequence at Kush, mostly from Phases E-08 (late 11th century) to E-11. The earliest comes from Phase E-06 (9th to 11th century) but it is possible that this sherd is intrusive as this is the earliest sherd of frit in the Kush sequence and no frit occurred in the following Phase E-07.

19. **FRIT.W** (White Frit)

Definition and description: As FRIT.F but with white glaze that covers only the interior and the rim leaving the exterior bare. The glaze may originally have been a yellow colour.

Body type: Frit **Origin:** Iran

Parallels & external dating evidence: See the general introduction to frits (above).

Internal dating evidence: Five sherds occur in the phased sequence at Kush from Phases E-09 and E-10 (12th to 13th/14th century).

20. **FRIT.L** (Frit Lustre)

Definition and description: As FRIT.F but with thick, opacified glaze which covers both the interior and exterior of the bowl and is normally in somewhat better condition than other frits. Lustre decoration is present on the surface.

Body type: Frit **Origin:** Iran

Fig: CP. 9.

Parallels & external dating evidence: The earliest known Persian frit lustre is dated 1179 AD. Watson has argued that this must be within a few years of the introduction of the technique to Persia from Egypt in the 1160s and 70s AD (Watson 1985: 23-4). Watson believes that production came to a virtual end at around the time of the Mongol invasions of Persia in 1220 AD and that when it resumed, in about 1261 AD, it was dedicated largely to the production of tiles (*ibid.*: 21, 110-1).

The 'moon face' on sherd K239 fits the Kāshān lustre style (e.g. Grube 1976: N. 161. Watson 1985: *passim*) and can therefore be dated to the late 12th or early 13th century, with the proviso that it might be later 13th or even 14th century (**CP. 9**).

Types: 47 (**Fig. 10**).

Internal dating evidence: Six sherds were found in the phased sequence at Kush from Phases E-10 and E-11 (13th/14th century). Not found at al-Mataf.

Discussion: There are two sherds of particular interest illustrated in **CP. 9**: K239 (no Phase), mentioned above, has a face design in the centre of the bowl, the other (K126 - Phase E-11) has two inscriptions, one in *kufic* and the other in *naskh*.

21. **FRIT.T** (Turquoise Frit)

Definition and description: As FRIT.F but the thick glaze (0.3 mm) has opacified to become iridescent turquoise with patches of white. It is not clear what the original colour was. The glaze covers the interior of the vessel and the exterior above the base.

Body type: Frit **Origin:** Iran

Parallels & external dating evidence: See the general introduction to frits (above).

Internal dating evidence: Three sherds were found in the phased sequence at Kush from Phase E-10 (13th/14th century).

22. **FRIT.B** (Coarse Frit)

Definition and description: As FRIT.T but with a body 5 mm or more thick.

Body type: Frit **Origin:** Iran

Parallels & external dating evidence: See the general introduction to frits (above).

Internal dating evidence: Two sherds occur in the phased sequence at Kush from Phase E-11, but these must be residual.

23. **FRIT.C** (Cobalt Frit)

Definition and description: As FRIT.F but with cobalt coloured glaze. Weathering has produced patches of white and yellow staining. The glaze covers the interior and the rim only. The exterior is unglazed.

Body type: Frit **Origin:** Iran

Parallels & external dating evidence: See the general introduction to frits (above).

Types: 43 is the most common (**Fig. 10**).

Internal dating evidence: Four sherds were found in the phased sequence at Kush, in Phase E-11 but these must be residual.

Al-Mataf Frits

24. **FRIT.TB** (Turquoise and Black Underglaze-Painted Frit)

Definition and description: This class has a frit body covered with a bright turquoise glaze on both the interior and exterior. Underneath the glaze, and predominantly on the interior, decoration is painted in black. The forms found at Hulaylah are most commonly bowls (Kennet 1994: class 6).

Body type: Frit **Origin:** ?

Parallels & external dating evidence: This class is one of the early underglazed painted wares, which began to be produced in Persia from about the mid-12th century onwards (Morgan 1994a: type 2, group1, cat. 222 - 226) and continued after the Mongol invasion. There is some debate over the introduction of the technique; it has been placed between the early 12th and the early 13th century (Soustiel 1985: 86-89. Watson 1978: 92). At Ḥama the class appears to occur throughout the 12th to 14th century when occupation ended at this site (Riis & Poulsen 1957: 157-178, fig. 18) whilst similar decoration continued to be popular until as late as the 15th century (Lane 1947: 34-35, 44-45. Lane 1957: 30-31). Golombek *et al.* (1996: 118-9) place this decorative scheme in the 12th century.

Types: 112 (**Fig. 10**).

Internal dating evidence: Seven sherds came to light from Phase IV (16th century) onwards at al-Mataf, three sherds were found on the 1994 Survey, and none at Kush. This apparent rarity contrasts with the 43 examples picked up at Hulaylah (Kennet 1994: fig. 5, ware 6).

Discussion: Without the Hulaylah evidence the class would seem to be a rare import of the later 15th/16th century. The contrast between the abundance of FRIT.TB at Hulaylah and its rarity at al-Mataf and on the 1994 Survey is difficult to explain.

25. **FRIT.BW** (Blue-and-White Frit)

Definition and description: A good-quality thick frit body; the interior and the exterior of the vessels are covered in glaze under-painted with cobalt blue. The glaze seems to be susceptible to weathering in some cases.

Body type: Frit **Origin:** Iran?

Parallels & external dating evidence: Imitations of Chinese Blue-and-White Porcelain were produced in the Near East from the 14th until the 19th century (Soustiel 1985: 214). There are no criteria for dating small sherds more accurately.

Types: 101 and 111 (**Fig. 10**).

Internal dating evidence: Altogether 88 sherds were found through the sequence at al-Mataf from the earliest phases (mid 14th century). Hansman discusses those sherds which he excavated at al-Mataf and al-Nudūd (1985: 53, fig. 13, colour pl. III b g j k n p) but his dating evidence related to the 'Persian camp' theory should be ignored (Kennet 2003: 118-120). This class does not occur at Kush but was found at Hulaylah (Kennet 1994: ware 4).

26. **FRIT.DEG** (Degraded Frit)

Definition and description: This class has a frit body covered with an exfoliating glaze that is so badly weathered as to obscure the traces of painting below. Such virulent weathering is a common feature of much of the glaze pottery found in the very saline soil conditions at al-Mataf. It is quite possible that these sherds were originally TURQ.

Body type: Frit **Origin:** Iran?

Parallels & external dating evidence: No external dating evidence.

Types: 111 most common, 101 also present (**Fig. 10**).

Internal dating evidence: Eighty-six sherds occurred at al-Mataf. The earliest occurrence is in Phase III of the Mosque and Occupation Area (late 15th/16th century). Not found at Kush.

Other Glazed Classes

In addition to sgraffiatos and frits there are two notable glazed classes in the late Kush assemblage; Manganese Purple (MGPAINT) and 'Yemeni Yellow' (YEMEN). At the beginning of the al-Mataf sequence, from the 14th century onwards, the glazed assemblage began to change quite dramatically. Most notably sgraffiatos disappeared and Chinese imports became much more abundant. A whole range of new glaze classes was introduced during the 15th and 16th century and later, many of which were lead-glazed monochrome wares.

The same types occur in many of the glazed classes below. Most of the vessels are bowls, the most common types are shown in **Fig. 11**.

27. **MGPAINT** (Manganese Purple Underglazed-Painted)

Definition and description: Bowls with manganese painted decoration under a clear or green/yellow-tinted glaze on a thick pale-yellow body. This class was first defined as 'Manganese purple' at Hulaylah (MGPAINT.2) and a second, closely-related but quite distinct, group was then defined at Kush (MGPAINT.1).

MGPAINT.1 The MGPAINT from Kush has a coarser, thicker, less well-fired fabric with a lot of coarse grits. The body is a pale yellow colour (2.5Y 8/4). The glaze is often completely weathered to reveal manganese paint on bare clay; in other cases it has weathered to a iridescent silverywhite through which it is hard to see the underglaze painting. Decoration consists of 5-mm thick bands of manganese paint defining areas that are often filled with cross-hatching. The glaze stops just over the rim, leaving all of the outside of the vessel bare. The most common rim forms are types 26 and 31 (**Fig. 12**).

MGPAINT.2 The sherds from Hulaylah and Area 74 are glazed on the interior and on parts of the exterior with a clear or green/yellow-tinted lead glaze with common patches of inglaze blue or green-blue. The glaze appears to be more stable than MGPAINT.1, and can be well preserved and the fabric is thinner, harder fired and less grainy. The decoration consists of similar bands of manganese paint, but cross-hatching is less common and other, more delicate patterns are sometimes present. The most common form is **Fig. 12**: Will. 18442 and Will. 17717 (from the Williamson Collection).

No closed vessels were recorded.

Body type: Earthen **Origin:** Iran?

Fig: Fig. 12, CP. 10, CP. 11.

Parallels & external dating evidence: No certain parallels have been found for MGPAINT.1, although some sherds have been noted amongst the Williamson Collection (Priestman & Kennet 2002). In a short note on the island of Kīsh, Whitehouse has reported a class with very similar characteristics: '*...bowl with underglaze ornament of the type found on Bahrain. As at Siraf the glaze seldom survives. When preserved, however, it is bluish green or green. The decoration is black and consists mainly of radial panels filled with cross hatches, chevrons or groups of dots.*' (Whitehouse 1976: 147). If this material does turn out to be MGPAINT.1, its occurrence on Kīsh would be consistent with an 11th to 13th century date.

The closest published parallel to MGPAINT.2 is Chittick's 'manganese purple' from Kilwa and Manda, which comes from late 16th to 18th-century contexts (Chittick 1974: 305, colour pl. II, pl. 114 d e. Chittick 1984: 12, 82, pl. 36). The sherds reported by Larsen from Bahrain may also belong to this group, but the published description is not detailed enough to be sure (Larsen 1983: 291, fig. 68 k-n).

Types: 26, 31, 32 (MGPAINT.1) & Will. 8111, 18442, 17717 (MGPAINT.2) (**Fig. 12**).

Internal dating evidence: A hundred and ten examples of MGPAINT.1 were found at Kush from Phase E-06 onwards suggesting that the class was introduced in the 11th century or even earlier. It is most common in the latest two Phases suggesting that its apogee was the 13th century.

MGPAINT.2 is very common in Ras al-Khaimah; 31 examples were picked up at Hulaylah (Kennet 1994: ware 25, fig. 5), and 72 from Area 74. There is therefore no doubt that MGPAINT.2 was common in the post al-Mataf period, but there is at present no more precise indication of when it began or ceased to circulate.

Only one sherd was recorded from the al-Mataf sequence (Phase I) but it is not clear if this is MGPAINT 1 or 2. It is now thought that the Underglaze Painted Earthenware (UNDERGL) from al-Mataf represents the missing link between the two MGPAINT traditions that existed either side of the 14th to 16th centuries. The extremely saline conditions at al-Mataf have caused the glaze of UNDERGL to degrade to the state where it is hardly recognisable.

At the time the study of the pottery from the 1994 Survey of Ras al-Khaimah was undertaken (January 1994), the distinction between the two sub-classes of MGPAINT was not made.

Discussion: It is clear that this is a long-lived decorative tradition that was probably produced at a number of different centres. The absence from al-Mataf is puzzling, and is most likely to be due to conditions at that site.

Examination of the Williamson Collection indicates that further subdivisions of MGPAINT are present in Iran, though the definition, chronology and distribution of these is not yet established (Priestman & Kennet 2002). Final publication of the Williamson material will throw further light on this material.

28. YEMEN (Yemeni Yellow)

Definition and description: Consists of simple bowls with a straight or everted rim, coated on the inside and over the rim with a bright yellow glaze (5Y 8/6). The decoration is very simple, it consists of strokes of inglaze brown, or more rarely green, swept in loops across the interior of the bowl from rim to rim. The decoration is badly faded in most cases. The glaze is unstable and degrades to the texture of fine sandpaper. The bowls tend to be quite thick-walled. There is more than one fabric, fabric 3 is the most common, but other, lighter coloured fabrics with less mica are also present.

Body type: Earthen **Origin:** Yemen

Fig: Fig. 123, CP. 12.

Parallels & external dating evidence: This class is known as 'mustard' in Yemen (Hardy-Guilbert & Rougeulle 1997: 173-4, fig. 1 6-9) and 'black-on-yellow' in East Africa (Horton 1996: 291). It appears to be distinct from, and earlier than, Zabidi 'yellow salad' (Mason & Keall 1988: 454 fig 3e. Ciuk & Keall 1996: pl. 95/47 d-g). Keall has however found YEMEN in contexts from the Zabid citadel dated to his 'Islam 4' period (1150 to 1350) - although the dating is based on an arbitrary periodisation and is not certain (Ciuk & Keall 1996: 4-5, pl. 95/45h). It also occurs at Kilwa in levels of the 14th century and earlier (Chittick 1974: 304), and at Manda in levels datable to the late 13th to 14th century (Chittick

1984: 81-82, fig. 39). In fact Horton has pointed out that it occurs at virtually every late 13th and 14th-century site on the East African coast (Horton 1996: 291). At Shanga its arrival is dated to about 1250 and it circulated for about a century (*ibid.*). At Quseir al-Qadim in Egypt it was called 'mustard ware' and is dated to the 13th century (Whitcomb & Johnson 1979: 106, pl. 37 e g, f 41 c, 42 b, etc. 1982: 137-8 pl 37). There is some evidence that the class was manufactured in Yemen, (Doe 1963: 153).

Types: 41 and 42 (**Fig. 13**).

Internal dating evidence: Twenty sherds were found at Kush in Phases E-10 and E-11, post-dating the introduction of monochrome sgraffiatos and frits, and contemporary with the introduction of Longquan Celadon and Dehua Moulded wares. The introduction of YEMEN to Kush can therefore be dated to the 13th century. YEMEN did not occur at al-Mataf, which suggests that it did not circulate in this part of the Gulf in the early to mid-14th century or later.

Discussion: This is an interesting ware with a wide distribution. Ras al-Khaimah is the most easterly known find spot. Yemeni imports are not common in the Gulf in earlier periods and the presence of YEMEN is perhaps indicative of South Arabia's increasing commercial importance in the 13th century.

29. **MGTURQ** (Turquoise & Manganese)

Definition and description: This class is identical to FRIT.TB except it has an earthenware body.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: As FRIT.TB.

Internal dating evidence: Eight sherds were found on the 1994 Survey, but none at Kush or al-Mataf.

30. **PERSIA** (Persian Blue Speckled)

Definition and description: This class has a reddish earthenware body covered inside and over the rim with a mottled glaze ranging in colour from dark green to light grey but most commonly dark blue. The mottling seems to be caused by inclusions within the glaze where the colorants are not well mixed, and by the glaze puddling slightly.

Body type: Earthen **Origin:** Iran

Parallels & external dating evidence: Hansman reported this class, which he called 'Persian imitation celadon' from al-Mataf and suggested a 16th-century date and an Iranian origin based upon the examples he had found in Iran (Hansman 1985: 52, fig. 12a, colour pl. V p q r s). Sherds of PERSIA in the Williamson Collection come from more than 20 sites on the Iranian coast (Priestman & Kennet 2002). Persian Blue Speckled also occurs at Kilwa in contexts of the the mid-15th to 16th century, where Chittick called it 'standard monochrome' (Chittick 1974: 304, colour pl. II, fig. 91 o, pl. 112 c f). At Shanga, Horton classified this class together with other monochromes and suggested a South Arabian origin (Horton 1996: 293). In fact PERSIA is closest to his 'Blue Monochrome', which first occurs in Trench 6-10 from phase 17 and is dated to the early 14th century based on the presence of YEMEN. Sherds very similar to Persian Blue Speckled were found in late 17th-century contexts at Fort Jesus (Kirkman 1974: 118-9, fig, 72 9 10 13).

Types: 104 and 111 are the most common (**Fig. 11**).

Internal dating evidence: A total of 50 sherds were found at Hulaylah (Kennet 1994: ware 7) and 335 at al-Mataf where it first occurs in Phase II at the Mosque, which is dated to the 14th/15th century. However, a single sherd occurred in Phase E-10 of the Kush sequence which might, if it is not intrusive, suggest a 13th century date for the beginnings of the class.

The al-Mataf Mosque sequence suggests that PERSIA first appeared earlier than KHUNJ whereas both classes occur simultaneously in the Occupation sequence.

31. **KHUNJ** (Khunj or Bahla Ware)

Definition and description: This class has a well-levigated and well-fired fabric with a sub-conchoidal fracture, which is often difficult to distinguish from stoneware. The clay fires anywhere between a light grey and a pinky red, often both colours appear on the same sherd. The glaze is usually quite thin and ranges from light olive green to a dirty greenish brown. It has a distinctive speckled appearance caused by numerous dark-brown particles in the glaze. It can be glazed on both the interior and the exterior or on the interior only. The forms are most commonly bowls with a straight or flaring rim, although closed forms do occur. One of the class's most distinctive features is the red blotching visible on the surface; this is caused by the clay having oxidised in patches, perhaps where perforations in the glaze have allowed air to reach the fabric (e.g. Hansman 1985: colour pl. V u).

Body type: Earthen **Origin:** Iran or Oman?

Parallels & external dating evidence: Williamson named this class 'Khunj' after the town in western Iran where he believed he had found the production centre (Hansman 1985: 52). An examination of material from Khunj in the Williamson Collection revealed that it is in fact identical. However, it was not possible to trace the relevant wasters that Williamson mentions on his record card. The fact that kiln tripods from the site are made of an entirely different fabric means that it is difficult to be sure about the accuracy of Williamson's attribution.
A very similar class has been recorded from Oman where it has been called 'Baḥla ware' due to the fact that an identical ware is produced in Baḥla today (Whitcomb 1975: 129). Survey at Khatt in Ras al-Khaimah has revealed a

significant number of kiln tripods coated with the 'Khunj' type glaze indicating that production may also have been carried on there (de Cardi *et al:* 1994: 63, pl. XV). The class also occurs in Bahrain (P. Morgan, personal communication) and in East Africa (de Cardi & Doe 1971: 266-67). A 16th/17th-century date is usually suggested but this is not based on precise evidence.

Types: 101, 111 and 112 are the most common (**Fig. 11**).

Internal dating evidence: Two-hundred and ten sherds of KHUNJ were found in the al-Mataf sequence, first occurring in Phase III in the Mosque and Occupation Areas. This suggests that it began to be imported during the 15th or early 16th century, and later than the first occurrence of Persian Blue Speckled (PERSIA). There are some sites on the 1994 Survey, notably Area 74, where KHUNJ occurs (97 sherds) and PERSIA does not, suggesting that KHUNJ continued to circulate after PERSIA ceased to. Hansman notes that no sherds of KHUNJ were recovered in the upper levels of Trench 1 in Ras al-Khaimah (Level IV). Although no date is given for this layer, it is likely to be 19th or 20th century (Hansman 1985: 17).

Hansman found KHUNJ only at al-Nudūd and Khashm Nadīr but none in his trenches at al-Mataf (Hansman 1985: 53). On this basis he suggested an 18th-century date for the class. In fact KHUNJ is one of the most abundant glazed classes from the al-Mataf sequence and has also been found by other teams excavating at the site (e.g. Hardy-Guilbert 1991b: 190-1, n. 57, 58). It is difficult to understand why Hansman did not find it. Whatever the reason, the 18th-century date he suggests can be disregarded.

32. **DKHUNJ** (Dark Khunj)

Definition and description: As KHUNJ but with a darker brown glaze.

Body type: Earthen **Origin:** Iran or Oman?

Parallels & external dating evidence: As KHUNJ.

Internal dating evidence: Occurs in Phase V and VI of the Mosque at al-Mataf (16th century).

33. **LGREEN** (Light Green Glaze/Creamy Imitation Celadon)

Definition and description: This very distinctive class consists of bowls made of a white-grey to pink earthenware body. The glaze, which covers only the interior and the rim, is an opaque, milky, pale green colour, which does not always fuse well with the body and tends to puddle very markedly. The colour of the glaze is very similar to the tone of Longquan Celadon glaze, which it seems to have been attempting to imitate.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Twenty sherds of this class were picked up by the 1994 Survey and 63 at Hulaylah, indicating that it was common in Ras al-Khaimah (Kennet 1994: ware 10). It does not occur at Kush and only one sherd occurs at al-Mataf in Phase Rec at the Mosque. This would suggest that the class can be dated to later than the abandonment of al-Mataf, i.e. post-1575/1600.

34. **MUSTARD** (Mustard Glaze)

Definition and description: A pinky white body with a speckled mustard glaze covering either the entire surface or the interior only. Forms tend to be bowls. The glaze is generally better preserved than 'YEMEN' and more mustard-brown than yellow in colour.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No reliable external dating evidence.

Internal dating evidence: Eleven sherds occurred at al-Mataf, mostly in Phase IV (16th century) and later but one sherd, probably a misidentification, is reported from Phase I of the Mosque. Twenty-two sherds were found on the 1994 Survey and 29 at Hulaylah but none at Kush (Kennet 1994: ware 26). Twelve sherds have been found in Area 74. This evidence indicates that the class was introduced in the 16th century and continued to circulate after the abandonment of al-Mataf.

35. **GMONO** (Monochrome Green Glaze)

Definition and description: This is an earthenware class with a monochrome green lead glaze on the interior and over the rim, normally having a bare exterior. It was first defined at Hulaylah (GMONO.2), later a second, quite distinct class was defined at Kush (GMONO.1).

GMONO.1 In terms of fabric (Fabric 1), colour and feel of the glaze, and firing technique GMONO.1 is clearly related to the later sgraffiato tradition (e.g. GGRAF). It is normally slipped but lacks the definitive incised decoration. Forms are predominantly small bowls although some closed vessels have also been noted.

GMONO.2 The material from al-Mataf and the 1994 Survey is quite different to GMONO.1: it is not normally slipped, has a coarser pale-yellow body, and tends to have everted rims.

Body type: Earthen **Origin:** Iran

Parallels & external dating evidence: Monochrome green glazes first appear at Shanga in phase 16 of Trench 6-10 (one sherd in phase 14) suggesting that it could have been introduced anywhere between the mid-12th and 13th century. It does not become common until phase 18 in the mid-14th century (Horton 1996: table 14).

Types: GMONO.1: types 25 and 29 predominate. GMONO.2: types 104 and 111 are the most common (**Fig. 14**).

Internal dating evidence: One hundred and five sherds of GMONO.1 were found at Kush from Phase E-06 (9^{th} to 11^{th} century) onwards. Five sherds come from Phases E-06 and E-07 - predating the introduction of GGRAF. Twenty-eight sherds of GMONO.2 occurred at al-Mataf from Phase III of the Mosque (late $15^{th}/16^{th}$ century) and later. In addition 21 sherds were found at Hulaylah (Kennet 1994: ware 30). Fifty-four sherds of GMONO.2 have been found in Area 74. Sixty-four sherds were picked up by the 1994 Survey but at that time the distinction between GMONO.1 and 2 was not made. It is thought that most of the 1994 Survey material is GMONO.2. Monochrome green glaze pottery is clearly common in Ras al-Khaimah from the $10^{th}/11^{th}$ century onwards, and stayed in circulation until after the abandonment of al-Mataf.

Discussion: GMONO.1 is technically related to the later sgraffiato tradition and is datable to between the 11^{th} and the 13^{th} century. GMONO.2, the later group, is unrelated to sgraffiato and datable to the 16^{th} century and later.

36. **REDYEL** (Red and Yellow)

Definition and description: This is an unusual class with a creamy buff fabric and a slightly speckled mustard-yellow glaze. Under the glaze the exterior is painted with a very thin, maroon red slip which has been incised to leave a series of deep, mustard yellow stripes in a champlevé-type technique.

Body type: Earthen **Origin:** ?

Fig: Fig. 13.

Parallels & external dating evidence: A similar sherd was found at Mas^cudi in Abu Dhabi (Hardy-Guilbert 1991a: fig. 20 5 & 10) but there is no dating evidence for this.

Internal dating evidence: No examples were found at Kush or al-Mataf. Twenty-six sherds have been found in Area 74, confirming a post-1600 AD date. Sixteen sherds were picked up by the 1994 Survey and six at Hulaylah (Kennet 1994: ware 38).

37. **WILLOW** (Willow Pattern)

Definition and description: This is an English imitation of Chinese Blue-and-White Porcelain, which is recognisable by the soft paste with a slightly granular feel and a rougher fracture than the normally conchoidal fracture of Chinese porcelain. The colours are warmer and tend to sink into the glaze more than they do on Chinese (Godden 1974a: 7. Godden 1974b: 21).

Body type: Porcelain **Origin:** Europe

Parallels & external dating evidence: The production of English Blue-and-White ceramics began in 1740 (Godden 1974a: 7. Godden 1974b: 21).

Internal dating evidence: Willow pattern does not occur at Kush, al-Mataf or Hulaylah. Nine sherds were picked up by the 1994 Survey but none from Area 74.

38. **BWEARTH** (Blue-and-White Earthenware)

Definition and description: This is a creamy or red-bodied earthenware with a tin glaze and cobalt decoration apparently imitating Chinese Blue-and-White Porcelain.

Body type: Earthen **Origin:** Iran

Parallels & external dating evidence: Imitations of Chinese Blue-and-White Porcelain were produced in the Near East from the 14^{th} until the 19^{th} century (Soustiel 1985: 214). At the present time there is no method of dating sherds more accurately than this.

Internal dating evidence: Three sherds occurred at al-Mataf, all in Phase III of the Mosque and Occupation Area (late $15^{th}/16^{th}$ century). None occurred at Kush. Only one sherd was picked up by the 1994 Survey. This class was not distinguished from FRIT.BW at the time of the Hulaylah survey (Kennet 1994: ware 4).

Discussion: Earthenware imitation blue-and-white is very rare compared to the frit version (FRIT.BW).

39. **BLACK** (Black Glazed Earthenware)

Definition and description: This class has a dense, buff-coloured earthenware body with a fine hackly fracture and a fine sandy texture. The glaze seems jet black and it tends to puddle. In some cases there is a black glaze on one side and a light blue-grey glaze on the other. Ribbing is common on the interior. Forms are almost entirely closed. This class is sometimes difficult to distinguish from Martaban and may be related, although BLACK seems to be Near Eastern earthenware

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Only 12 sherds were found at al-Mataf from Phase II ($14^{th}/15^{th}$ century) of the Mosque onwards. At Hulaylah this was classified as Martaban (MTB), and it did not occur at Kush. One sherd was recorded from the 1994 Survey.

40. **IMITCEL** (Imitation Celadon)

Definition and description: The class has a good quality thick, crazed green glaze and a thick, dense, creamy white, earthenware body. It looks quite convincingly like Longquan Celadon.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Seven sherds were found at al-Mataf from Phase VI at the Mosque onwards (16th century). None were found at Kush but a number were picked up at Hulaylah and on the 1994 Survey (Kennet 1994: ware 10). This is a rare imitation celadon that was found only in the latest Phase at al-Mataf and on the survey. It has been used as a type fossil of post-al-Mataf occupation by the 1994 Survey.

Discussion: This should not be confused with Hansman's 'Persian imitation celadon' (1985: 52), which we have called Persian Blue Speckled (PERSIA).

41. **UNDERGL** (Underglaze Painted Earthenware)

Definition and description: During the al-Mataf pottery study a large number of glazed sherds came to light many of which were decorated in complex patterns with underglazed painting in manganese and in some cases possibly cobalt. It is difficult to describe the decoration because the sherds were in a very bad condition, the glazes having often deteriorated to little more than a white powder. This is probably due to the highly saline conditions at the site. In some cases it is difficult to be sure that the sherds were ever glazed at all. The body is most often a cream earthenware, but it is sometimes red. In most cases it is impossible to identify the original glaze colour and style of decoration. The vessels are mostly bowls though some jars do occur.

Body type: Earthen **Origin:** ?

Fig: Fig. 15.

Parallels & external dating evidence: Because of the degraded state of this material it is difficult to establish parallels with published material from other sites. Much of this material is probably a regional variation of the underglazed painted ware tradition that was widespread in Iran in the 15th and 16th centuries (e.g. Golombek *et al.* 1996).

Types: 106 and 112 are the most common (**Fig. 11**).

Internal dating evidence: Altogether 1,354 sherds were found in the British sequence at al-Mataf, from all Phases of the excavation sequence (2.9% of total assemblage, 47.5% of the glazed assemblage). Seventy-seven sherds were picked up by the 1994 Survey. Sasaki reported a large quantity of this class, which he called 'Iranian white glazed pottery' (Sasaki 1991: 207, 214, fig. 2 7-31).

Discussion: This class probably represents the missing link between MGPAINT.1 and MGPAINT.2. MGPAINT.1 occurs at Kush and MGPAINT.2 continues into the post-al-Mataf period, but no MGPAINT was identified at al-Mataf. UNDERGL is the most common glazed ware at al-Mataf.

Similar glazed earthenware was also the most common glazed ware in the Japanese assemblage according to the quantification of their 'Pit 3' where Sasaki & Sasaki describe this class as 'White glazed earthenware with underglaze decoration' and note that it makes up 4.91% of the total assemblage and 50% of the glazed assemblage (Sasaki & Sasaki 1992: table 1). Hardy-Guilbert also mentions it (Hardy-Guilbert 1991b: 191). Hansman does not mention glazed earthenware of this description although he reports all other major classes that are present at the site. He must have neglected it because of its poor state of preservation.

42. **MOTTLE** (Mottled Green Monochrome)

Definition and description: Fabric 3. Glazed and slipped on the interior and over the rim with a bare exterior. The glaze is mottled green to light creamy green in stripes. Technically, it resembles GGRAF and the GMONO.1 from Kush.

Body type: Earthen **Origin:** Iran

Parallels & external dating evidence: No published parallels.

Internal dating evidence: Seven sherds occur at Kush but none from the phased sequence.

43. **IRONGL** (Iron Glazed Storage Jars)

Definition and description: These are small jars, up to about 20 cm high, glazed inside and out with a brown-green glaze which is sometimes slightly blotchy. The surface is often ribbed on the interior, and sometimes on the exterior. The body is a hard-fired earthenware with a sub-conchoidal fracture and a fine sandy structure. The fabric colour varies from pale yellow (2.5Y 8/3), through pink (7.5YR 7/4 to light grey (2.5Y 7/1). The wall thickness varies between 0.6 to 10 mm.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No published parallels.

Internal dating evidence: One sherd was picked up in Area 74 and five sherds were found by the Mountain Village Survey.

44. **UNCLASS-G** (Unclassified Glazed)

Definition and description: This grouping includes all sherds of glazed earthenware from Kush that were too small or too degraded to allow classification.

Internal dating evidence: A total of 315 UNCLASS-G sherds come from the phased sequence at Kush.

45. **UNIQG** (Unique Glazed)

Definition and description: Glazed sherds from Kush which did not fit into any of the defined classes and which were therefore described and drawn individually. These descriptions are not included in the present study but will be included in the final publication.

Far Eastern Classes

Derek Kennet & Regina Krahl

Chinese glazed ceramics were traded in the Gulf and the Western Indian Ocean from the 8th or 9th century until the 19th century. The Far Eastern imports are a numerically small but historically significant part of the assemblages from Ras al-Khaimah. The combined Kush and al-Mataf sequences of Far Eastern trade ceramics form the longest quantified excavated sequence published from the Indian Ocean.

Most research in the field of Chinese ceramics has been geared towards Imperial production and is largely based on complete objects from tombs, museums or private collections rather than archaeological assemblages of small fragments. Certainly, the study of relatively low quality export wares or 'trade ceramics' is much less developed. There are therefore considerable difficulties in dating these ceramics, especially the earlier classes. Such wares are typified by a relatively conservative stylistic development and securely dated examples are rare. There is no generally accepted classification system: subdivision is usually based on a mixture of style, dynasty, and place or region of production and there are many differing terminologies. Some Eastern scholars explicitly reject some of the terminology used by Westerners (e.g. 'Celadon', 'Kraak', 'Swatow'). There are very few publications of tomb groups or kiln sites with accurately dated contexts that are easily accessible to scholars in the West.

In using the terms 'stoneware' and 'porcelain' we follow Medley's (1976) definitions:

Stonewares are clays that fire at temperatures between 1,200°C and 1,300°C. The clay and temper fuses completely to form an impermeable body. They are normally coated in a feldspathic or alkaline glaze (Medley 1976: 14). Stoneware first superseded earthenware during the Tang period (681-906 AD).

Porcelain is made of a mixture of kaolin and white China stone, a refined non-feldspathic material derived from granite. When mixed and fired the materials form a vitrified body at temperatures between 1,280°C and 1,400°C. The colour of the body is pure white or very pale grey. They can be glazed with alkaline glazes or re-fired with lead glazes at a lower temperature (Medley 1976: 14). Porcelain was born out of a gradual improvement in the white earthenware and stoneware bodies in the late 8th or early 9th century (Medley 1976: 97).

Stonewares

46. **CHANG** (Changsha polychrome underglaze painted stoneware)

Definition and description: Changsha is a distinctive stoneware with a greenish grey or buff body and a white slip. The thickly potted bowls are decorated in green or green and brown on a cream background using cupric and ferric underglaze pigmentation to represent simple floral and linear motifs. Rougeulle gives a detailed description and illustration of this class, which she calls '*grès du Hunan*' (Rougeulle 1991: 21-25) as does Whitehouse, who refers to it as 'painted stoneware' (1973: 248-249), and Tampoe (1989: 54-57, 320-325).

Body type: Stone **Origin:** China

Fig: Fig. 16.

Parallels & external dating evidence: Changsha ware is found in China and around the whole breadth of the Indian Ocean (Whitehouse 1973: 249-251. Liu 1991: 236). Evidence suggests that the Hunan production (one of three polychrome underglaze painted productions known) began in the middle Tang period and died out in the late Tang and Five Dynasties period (Liu 1991: 225-236). According to Watson the vessel forms suggest a date in the second half of the 9th century (W. Watson 1984: 64). A wreck containing large quantities of Changsha bowls, one of which is dated by an inscription to the early 9th century, has recently been excavated off Belitung in Indonesia (Flecker 2001).

Changsha has been found from numerous sites around the Gulf, including from the early 9th century mosque platform fill at Siraf, and Suhar (Whitehouse 1973: 249, fig. 18.2. Rougeulle 1991: 21-25).

Internal dating evidence: Only two sherds of Changsha ware are known from Ras al-Khaimah, both from Khatt .

47. **YUEC** (Yue ware)

Definition and description: Yue ware with fine incising. Olive-green glazed bowls with a dense grey stoneware body. Vessels are fine walled and the glaze colour varies to brown or yellow brown. Some sherds have fine incised decoration.

Body type: Stone **Origin:** China

Parallels & external dating evidence: A large group of such wares come from a shipwreck found at Penghu island between Fujian and Taiwan which are all very close in date and are attributed to the Five Dynasties/Ten Kingdoms period. 'Wu Yue', the state where Yue ware was made, lasted until 978 AD, and some of the sherds on the shipwreck are inscribed with a character that suggests the date of 977 AD. There are also some kiln site finds of this type attributed to the early Song (Chen Xinxiong 1994. Lin Shimin, 1999. Ben Morita 1987).

In a posthumous publication, Williamson has examined the distribution of Yue wares in the Gulf and Iran and shown that, as expected, they are much more common on coastal sites than inland, thereby demonstrating, if it were needed, a maritime distribution (Williamson 1987: 12-13). Williamson also noted a sherd from Jumayrah in Dubai (*ibid.*: 12). Rougeulle (1991: 32-37) has summarised the evidence for the occurrence of Yue wares from the Gulf, pointing out that they are rare on the Arabian side. They were abundant at Suhar (Pirazzoli-t'Serstevens 1988: nos. 1-26) and Siraf (Tampoe 1989: 51-54, 64, 310-319). Yue wares are generally dated to the 9th to 11th century but the dating is imprecise. At Shanga they occurred between phases 4 and 15 in Trench 6-10 suggesting mid-9th to late 12th-century date (Horton 1996: 307). They may also have continued until the 12th century at Siraf (Tampoe 1989: 64) though these later sherds might be residual. It has been suggested that incised decoration might be datable to the Five Dynasties period (906-960 AD) (Rougeulle 1991: 37).

Internal dating evidence: Only three sherds of Yue celadon occurred at Kush in context 1414, which is not in the phased sequence. Context 1414 contains a lot of residual ceramic from Periods I and II but there are also a few sherds from Phases E-09 and E-10 (12th century onwards).

Discussion: The evidence cited above from Shanga and Siraf suggests that Yue celadons might have continued to circulate into the 12th century.

South Chinese Stonewares of the Song Period

Definition and description: During the Song period a large number of simple bowls with a thickened rim were produced in South China (e.g. Lam 1985: 2, 'Bowls with a thickened rim'). These are part of a generalised Southern Chinese tradition in which form and firing are similar, though the products of regions and specific kilns can sometimes be identified. At Kush two classes were defined, South Chinese White Stoneware (GWW) and Yue-type wares (GGW). As the distinction between these is not always made in the archaeological literature parallels and external dating evidence that is applicable to both classes has been presented together.

Combined Parallels & external dating evidence: These wares appear to be very common in the Western Indian Ocean. Rougeulle (1991: 27) refers to them as *porcelaine blanc ancien, 'bols a lèvre roulée'* of which about 15 pieces were found at Suhar (Pirazzoli't-Serstevens 1988: nos. 34, 36, 43, 49, 55), others were found at Siraf where Tampoe has classified them as 'Fine Grey wares' and 'Fine White wares' (1989: 59-62, fig. 87 1754, fig. 88 1793, fig.91 1828, 1832, 1833). 'Fine White ware' first occurs in Tampoe's period 3, i.e. possibly pre-dating the earthquake of 977, and 'Fine Grey' in period 4, dated 1000 to 1300 (*ibid.*: 73, 77-81). Hughes-Stanton and Kerr (1980: no. 224) publish a similar example that is dated to the period of the Five Dynasties (906-960 AD) although the dating evidence is not specified. Carswell excavated a number of examples in a dump of trade ceramics on the beach at a site called Allaippidy in Sri Lanka (1977/8: 37-42, fig. 11 326, 200-202, 240, pl. 8b). Carswell suggests that the whole assemblage can be dated to around 1100, though this is far from secure. Lam (1985: 8, pl. 5) dates examples from Tioman to the late Northern Song period (late 11th to early 12th century).

It is interesting that no examples of these wares were found at Shanga (Horton 1996: 303-10).

48. **GWW** (South Chinese White Stoneware of the Song period)

Definition and description: White (or grey) glaze. The quality of the body is somewhat variable; it is stoneware that is almost porcelain in some cases. The forms are simple bowls the most common having a thickened, rolled rim, the centre of which is sometimes hollow. A few examples have a thickened flange rim. Further study of the variation of form and quality may allow this class to be further subdivided.

Body type: Stone **Origin:** China

Fig: Fig. 16.

Parallels & external dating evidence: For the rolled rim see Brown 1989 (101 nos. 71, 72 & 73), Guangdong Sheng Bowuguan 1981 (pl.6, fig.6), Fung Ping Shan Museum 1985 (pl.52) and Guangdong Provincial Museum & The Art Gallery, The Chinese University of Hong Kong 1989 (col. pl.31 right). The rolled rim first occurs in the late Tang period in Northern China and suggests a 10th/11th century date. For the flaring rim see Brown 1989 (102, nos. 74 & 75).

Internal dating evidence: Thirty four sherds come from the phased sequence at Kush. One example comes from Phase E-07 and two from Phase E-08 at Kush – these are amongst the earliest Chinese imports at the site and have been used as dating evidence. A larger number of sherds come from Phases E-09 and E-10 and a few from Phase E-

11. No examples were found at al-Mataf or by the 1994 Survey.

Discussion: This is part of a generalised Southern Chinese tradition in which form and firing are similar, though the products of regions and specific kilns can sometimes be identified.

49. **GGW** (Yue-type wares)

Definition and description: As GWW except with a yellowish olive colour glaze and occasional fine incised decoration under the glaze in the Yue style. The quality is quite poor compared to Yue wares.

Body type: Stone **Origin:** China

Fig: Fig. 16.

Parallels & external dating evidence: see above. These could be somewhat earlier than the Yue sherds described above (YUEC) as they have the quickly sketched designs which seem to precede the more carefully drawn ones.

Internal dating evidence: Nine sherds occur in the phased sequence at Kush, six from Phase E-08 and the remainder from Phases E-10 and E-11.

50. **GRE** (unidentified greenware)

Definition and description: A green stoneware similar to GWW and GGW above but otherwise unidentified.

Body type: Stone **Origin:** Far East

51. **CWW** (Carved White-Stoneware Lotus Bowls)

Definition and description: Fine stoneware body covered with a slightly blue tinted white glaze. The exterior of the bowls is carved into a lotus petal design. Regina Krahl believes these sherds to be of Guangdong manufacture and datable to the 12th century (personal communication).

Body type: Stone **Origin:** Far East

Parallels & external dating evidence: See Brown 1989 (pls.66-69) for bowls with lotus petals outside and Wenwu Bianji Weiyuanhui 1984 (pl.5, fig.8) for a white lotus petal bowl from Ganzhou in southern Jiangxi, near the border with Guangdong which is related, but not exactly like the Kush examples. Edwards McKinnon found examples amongst an excavated assemblage from Kota Cina in Sumatra dated to the 12th to 14th century (1975/6: fig. 1a, 1b, 2). In the Western Indian Ocean similar vessels have been found at Suhar and Siraf (Pirazzoli't-Serstevens 1988: nos. 32, 40, 42, 52-54, 62. Rougeulle 1991: 29-32, *décor de pétals de lotus gravés*. Tampoe 1989: fig. 91 1845). Rougeulle points out that this type of decoration is common on Yue celadons and other post-Song, Ding, and Qingbai wares, though uncommon on Chinese white wares (1991: 29). At Suhar CWW did not occur in the main sequence (*ibid*: 32). Similar vessels occur amongst the ceramics excavated by Carswell at Allaippidy, dated tentatively to the early 12th century (1985: pl. 87).

Internal dating evidence: Nine sherds occurred in the phased sequence at Kush from Phase E-08, E-10, and E-11.

52. **DHM** (Dehua Moulded Whiteware)

Definition and description: These vessels are small, shallow, white-glazed, stoneware bowls. The rim is bevelled and cut and, like the base, is unglazed. They are decorated with light moulded patterns on the exterior.

Body type: Stone **Origin:** China

Fig: Fig. 17.

Parallels & external dating evidence: This class of vessels has sometimes been referred to as 'Marco Polo ware' by archaeologists due to the similarity with the so-called 'Marco Polo vase' in the treasury of St. Mark in Venice (e.g. de Cardi 1975: 62). Some of the vessels from Kush have already been published (Kennet 1997: fig. 7 20-23) where a 13th-century date was proposed based on the fact that they were found at site K103 (old Hormuz?) in the Mīnāb Delta, an assemblage which Morgan has dated to between 1220 and 1300/50 (1991: 70-1 fig.6 8). Such vessels did not occur amongst the mixed cargo on the Sinan wreck, which is dated 1323 (Tokyo Kokoritsu 1983. Republic of Korea 1985). An example from Fujian, believed to be dated to the Yuan period (1279-1368 AD), is published by Hughes-Stanton and Kerr (1980: no. 186). Edwards McKinnon reports DHM amongst an excavated assemblage from Kota Cina in Sumatra dated to the 12th to 14th century (1975/6: fig. 3).

Internal dating evidence: At Kush 11 sherds of DHM occurred, mostly in Phase E-10 with two examples from E-11. It has been used as dating evidence. One example was found at al-Mataf in the surface deposits.

53. **DHP** (Dehua Plain Whiteware)

Definition and description: These vessels are as DHM but have no moulded decoration. The rim is bevelled and cut and tends to be darkened where there is no glaze.

Body type: Stone **Origin:** China

Fig: Fig. 16.

Parallels & external dating evidence: These vessels are difficult to identify in the literature. Their dating and occurrence appears to be similar to that of DHM. Exact parallels did not occur on the early 14th-century Sinan shipwreck (Tokyo Kokoritsu 1983: pl. 30) but some vessels of a somewhat similar concept did, although they are catalogued as Qingbai (Republic of Korea 1985: pl. 78, 79, 81).

Internal dating evidence: One sherd was found at al-Mataf in Phase Rec. At Kush four sherds occurred, all from Phase E-11 where it must be residual.

54. **WHT** (unidentified whiteware)

Definition and description: An unidentified white Far Eastern stoneware.

Body type: Stone **Origin:** China

55. **LQC** (Longquan Celadon)

Definition and description: Longquan Celadon has a good quality, light grey stoneware body covered in a thick green glaze that often crazes very finely. There is some variation in the fabric and glaze colour. This is a well-established class of ceramic that was widely exported to the Western Indian Ocean, the Near East, and the Mediterranean (e.g. Krahl 1986ii. Medley 1976: 146-52. Lunsingh Scheurleer 1974: 42-3).

Body type: Stone **Origin:** China

Parallels & external dating evidence: Longquan Celadon seems to have been exported to the Near East from the Yuan period (1279-1368 AD) until the end of the 15th century (Krahl 1986ii: 235-236). Within this period there are criteria that can be used to date the class more closely (Krahl 1986ii: 235-236. Morgan 1991: 71).

Types: 107, 111, 114 (**Fig. 18**).

Type 107 can be dated to the 13th or early 14th (Krahl 1986i: 209, TKS 15/235).

Type 114 occurs on Sinan shipwreck dated 1323 (Tokyo Kokoritsu 1983: pl. 30. Republic of Korea 1985: pl. 48, 49, 50, 55, 56 etc).

Internal dating evidence: At al-Mataf, 211 sherds occur in all phases except Phase Pre where the assemblage is too small to be representative. The proportion of Longquan Celadons decreased throughout the al-Mataf sequence (see below Chapter 4). At Kush LQC occurs in Phases E-10 and E-11 (13th century onwards).

Hansman described and discussed the al-Mataf celadons dating them mostly to the 14th and 15th century (1985: 25-27).

56. **SCHINA** (Thai or South-China Celadons)

Definition and description: These celadons are similar to the Longquan variety but the body and quality of the glaze is different. The fabric can be quite variable and is quite distinct from the Longquan body; some fabrics contain small black inclusions, others are a much darker grey colour. The glaze tends to be a deeper green and the crazing is denser.

At the current time there is no reliable way of distinguishing Thai or Southeast Asian celadons from the South Chinese productions of which there appear to have been many.

Body type: Stone **Origin:** Far East

Parallels & external dating evidence: Non-Longquan Celadon is sometimes distinguished in excavation reports but the available dating evidence is not precise (e.g. Morgan 1991: nos. 99-108).

Types: 107, 111, 114 (**Fig. 18**).

Internal dating evidence: Altogether 99 sherds were found at al-Mataf, first appearing in Phase I of the Mosque (late 14th century). No examples were found at Kush. Hansman described these as 'Thai celadons' at al-Mataf and noted that they started to arrive a little later than the Longquan Celadons (Hansman 1985: 43, fig. 10, colour pl. 1 k-s).

57. **CEL** (unidentified celadon)

Definition and description: An unidentified celadon.

Body type: Stone **Origin:** Far East

Stoneware Storage Jars

58. **DUSUN** (Dusun)

Definition and description: Thick-walled stoneware storage/transport jars covered in an irregular green glaze that only partially covers the exterior of the vessel. The rim is normally thickened, either squared or rounded, and small lug handles are attached on the shoulder.

Body type: Stone **Origin:** Far East

Parallels & external dating evidence: Although 'Dusun' still lacks a precise definition, these jars are well known from the Indian Ocean and the Gulf. They have been discussed by numerous scholars and are normally dated to the 8th/9th century (e.g. Carswell & Prickett 1984: 57. Costa & Wilkinson 1987: 186. Flecker 2001: 339. Harrison 1965. Horton 1996: 303 'olive-green glazed jars'. Pirazzoli-t'Serstevens 1988: 89, 98-100. Rougeulle 1991: 19-21. Tampoe 1989: 47-51, fig. 70-74, 'course grey stoneware'. Whitehouse 1968: 18. Whitehouse 1973: 244-246. Whitehouse 1979a: fig. 2) but it should be noted that very similar wares also occur in contexts as late as the 12th century, especially in South Asia and further east (e.g. Carswell 1985: pl. 102, 103. Lam 1985: pl. 80a).

Internal dating evidence: Although only one possible Dusun sherd occurred in the phased sequence at Kush (in Phase E-09 - 12^{th} century), five sherds were found at the site in unstratified deposits. Hansman reported another from the early areas at Hulaylah (1985: 33), and one sherd was picked up by the 1994 Survey.

Discussion: It seems that Dusun is part of a continuous tradition of stoneware jars that is related to the Martaban tradition (below). A precise definition and full study of the distribution and chronology is still required. Most examples in the Western Indian Ocean appear to be datable to the $8^{th}/9^{th}$ century. It is possible that these vessels were traded for their contents rather than their intrinsic value. Given the large quantities of Dusun found at Siraf, the small number retrieved from Kush is notable.

59. **MTB** (Martaban)

Definition and description: This class consists of large storage jars made of thick, pinky-white stoneware. The body is thick (8-10 mm) and contains white inclusions. The jars are coated with a dark brown glaze, which seems almost black and covers most, but not all, of the exterior. Underglaze applied decoration is common. The glaze tends to puddle slightly in some places, leaving the clay exposed. Some vessels have small, horizontal strap-handles on the top of the shoulder.

Body type: Stone **Origin:** Far East

Parallels & external dating evidence: 'Martaban' jars are related to the tradition of Far Eastern stoneware storage jars which goes back at least to the Tang period and continues to the present day (Brown 1988: 103-4. Krahl 1986iii: 884. Ongpin Valdes 1992: 64). Moore has presented a tentative classification of Martaban based on excavated sites in Sarawak (Moore 1970). Some of the material from Hulaylah and al-Mataf is similar to her Kalong ware and Shing brown-glazed jars which are dated to the 14^{th} and 15^{th} century, although it is difficult to be sure of the accuracy of these parallels (*ibid.*: 58-60, pls. 12 b c d, 13 a b., 71-73). The class has been found in $13^{th}/14^{th}$-century contexts at Hormuz and Kīsh (Morgan 1991: 70, pl. VIc. Whitehouse 1976: 147), whilst Krahl describes a number of 17^{th}-century contexts (Krahl 1986iii: 884). Horton reports Martaban at Shanga from the mid- to late 11^{th} century (1996: table 14). Brown (1988: 103-4) suggests that there were at least two Martaban kilns active between the 14^{th} and 16^{th} century and proposes that such jars were manufactured between the 7^{th} and the 20^{th} century. Martaban jars have also been found in a number of shipwrecks (e.g. Tripati *et al.* 2001).

Internal dating evidence: Altogether 78 sherds were found at al-Mataf, first occurring in Phase II at the Mosque ($14^{th}/15^{th}$ century). No examples were found at Kush but fourteen sherds were picked up by the 1994 Survey and at Hulaylah (Kennet 1994: ware 8). Hansman also excavated a number of examples at al-Mataf (1985: 33, colour pl. V I). As Martaban does not occur at Kush it appears not to have been imported to Ras al-Khaimah before the 14^{th} century. Its absence from the small Phase-I assemblage at al-Mataf is not convincing evidence that it did not circulate at that time.

Discussion: BSTONE and GBSTONE (below) are closely related to Martaban. The differences probably reflect the fact that a similar tradition of stoneware jars was manufactured at numerous centres across Southeast Asian and China for a considerable period of time. Dusun probably belongs to the same tradition. Despite Moore's study, further work is needed before these classes can be used as reliable dating tools.

60. **BSTONE** (Light Brown Glazed Stoneware)

Definition and description: This class is probably a sub-class of Martaban (MTB) with a much lighter brown glaze. The body is a light creamy buff stoneware, the glaze is light brown with a tint of mustard. The thickness of the glaze is irregular and it frequently puddles. There are sometimes traces of paint on parts of the surface that are not glazed.

Body type: Stone **Origin:** Far East

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Seven sherds were found at al-Mataf from Phase II of the Mosque onwards ($14^{th}/15^{th}$ century). Two sherds were picked up by the 1994 Survey.

61. **GBSTONE** (Grey-Bodied Dark-Glazed Stoneware)

Definition and description: This is similar to Martaban in its general appearance. The body is very thin and light with a powdery, buff-coloured fabric. The glaze is thicker and darker than KHUNJ and shows no sign of speckling.

Body type: Stone **Origin:** Far East

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Six sherds were found at al-Mataf from Phase III of the Mosque onwards (late $15^{th}/16^{th}$ century). No sherds were picked up by the 1994 Survey.

Porcelains

62. **WPORC** (White Porcelain)

Definition and description: This class was used as a catch-all used for sherds of white-glazed porcelain that were not otherwise identifiable.

Body type: Porcelain **Origin:** China

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Eight sherds occurred at al-Mataf from Phase III onwards (late 15th/16th century). Six sherds were found by the 1994 Survey.

63. **EASTIN** (Far Eastern White Glaze)

Definition and description: This is distinctive, thick, stoneware with a grey or red body and a thick, white glaze which is usually very finely crazed. The glaze can cover both surfaces, or only the interior.

Body type: Porcelain **Origin:** China

Parallels & external dating evidence: These sherds seem very similar to Burmese 'monochrome white' (Brown 1988: 101-3, pl. 62).

Internal dating evidence: Hansman noted similar ceramic at al-Mataf and suggested a 17th-century date (Hansman 1985: colour pl. V k & n). Twenty-one sherds occurred in the British excavations at al-Mataf from Phase III of the Mosque (late 15th/16th century), five sherds were picked up at Hulaylah (Kennet 1994: ware 33).

64. **CBW** (Chinese Blue-and-White Porcelain (Jingdezhen))

Definition and description: This is a well-established class of porcelain. It is covered with a transparent lime-alkali glaze and decorated with underglaze cobalt. It is possible to sub-divide and date CBW based on the style of decoration (e.g. see below SWATOW, KRAAK).

Body type: Porcelain **Origin:** China

Parallels & external dating evidence: There is growing evidence that cobalt decoration was first used in China in a limited way as early as the Tang period (e.g. Li 1996: 53). However, larger scale production and export of CBW did not begin until the first or second quarter of the 14th century at the earliest (Guy 1986: 76. Guy 1990: 26. Medley 1976: 176). CBW started to become common in elite circles in the Near East at the end of the 14th century (Lane 1947: 27-28. Gray 1948/9: 30. Krahl 1986ii: 482). Material datable to this early period has been found on Hormuz Island (Wiesner 1979: 13, figs. 4, 5) and sherds datable to the early 15th century have apparently been found at a mainland site close to Hormuz (Morgan 1991: note 40) but it did not begin to be traded widely until the mid to late 15th century (Krahl 1986ii: 533. Krahl 1997: 154). CBW continued to be exported to the Near East until the late 18th century when imitations began to be manufactured in Europe (Lunsingh Scheurleer 1974: 37-8). Within this very broad time scale CBW can be subdivided and dated more precisely on stylistic grounds. Regina Krahl has examined and dated the CBW sherds from al-Mataf and Kush.

Internal dating evidence: Altogether 215 sherds of CBW were found in the al-Mataf excavations and it provides the absolute dating evidence for the sequence there. The earliest material dates to the later 15th century and comes from Phase III of the Mosque. No CBW was found below Phase III and it is assumed that this is because none was being imported at that time. The1994 Survey picked up 151 sherds and seven sherds came from Phase E-11 at Kush and can be dated to the late 16th or early 17th century.

65. **NONCHIN** (Non Chinese Porcelain)

Definition and description: This class refers to a few sherds of blue-and-white porcelain which are not Chinese, although their precise provenance is not known. The group probably includes Vietnamese or Thai porcelains (for example Hansman 1985: colour plate V f).

Body type: Porcelain **Origin:** China

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Unresolved.

66. **VIET** (Vietnamese Blue-and-White)

Definition and description: As NONCHIN but probably Vietnamese in origin. The identification of this class was based on the sherds depicted by Hansman (1985: cl. Pl. V a, b, c). The body clay differs from Chinese products, it is a high-fired stoneware with a grey tone. The colour of the cobalt can be blue to brown, and the footring often has a distinctive iron brown dressing on it (a 'chocolate base').

Body type: Porcelain **Origin:** Far East

Parallels & external dating evidence: There is debate about the date of the early production of Vietnamese blue-and-white. Traditionally it has been argued that it began at the time of the Ming invasion of 1407-1427 (Brown 1988: 25-31) but Krahl has pointed out that the evidence that supports this claim is rather weak and that the earliest production should be dated to the middle of the 14th century based on parallels with Yuan wares. She also argues that it was around the end of the 15th century that potters became actively engaged in production for export and that large scale export lasted until the late 16th century after which time Vietnamese production could not compete with the mass-produced Kraak wares (KRAAK) of the Jingdezhen kilns (Krahl 1997: 147-155).

Internal dating evidence: Four sherds were found at al-Mataf in Phase V and Rec (16th and 16th/17th century).

67. **SWATOW** (Swatow)

Definition and description: This is a stylistic subdivision of CBW with a more solidly built body of a lower quality and greyer colour than Jingdezhen CBW. The base sherds tend to have grits embedded into the foot. Rustic and unsophisticated decorative schemes including landscapes are typical of Swatow blue-and-white (Krahl 1986ii: 883-93).

Body type: Porcelain **Origin:** China

Parallels & external dating evidence: Although from an archaeological and technical point of view Swatow is not precisely defined, it is well established in the art historical literature (e.g. Harrisson 1979. Krahl 1986ii: 883-93. Medley 1976: 234-6. Museum het Princesshof. 1979). It was probably manufactured at kilns around Zhangzhou in southern Fujian province. The dating evidence is not strong but Krahl has suggested that it was manufactured between 1550 and 1650, perhaps predominantly in the late Wan Li period (1573 to 1619 AD) (Krahl 1986ii: 884 & personal communication).

Internal dating evidence: Seven sherds were found at al-Mataf from Phases III, V, VI and Rec (late15th/16th century onwards). See the discussion under al-Mataf in Chapter 2.

68. **KRAAK** (Kraak or 'panelled wares')

Definition and description: 'Kraak' is a term that describes a later 16th century stylistic development of Chinese Blue and White porcelain that was intended specifically for export to Europe. There is some disagreement about the precise definition of Kraak: some scholars maintain that the division of the decoration into panels is the defining characteristic, others look towards the general motifs and style. All agree on the thinness and lightness of the ceramic, the fact that the porcelain contains small impurities, and that the glaze has a bluish tinge and a tendency to flake off. Foliated rims predominated and ring bases are rounded and often have grit adhering to them (Krahl 1986ii: 598-600. Rinadli 1989: 60-61, 67-68).

Body type: Porcelain **Origin:** China

Parallels & external dating evidence: Kraak began to be exported in large quantities by 1575 AD and the peak of production can be dated to between 1590-1640 AD during which time it is thought to completely dominate all trade-ceramic assemblages (Krahl 1986ii: 598. Rinaldi 1989: 62). In the Gulf Kraak has so far been reported from the excavations at Qalaᶜat al-Bahrain (Kervran *et al.* 1982: 97-103) and it is also well represented amongst the Far Eastern ceramics in the Williamson Collection from Southern Iran (personal observation).

Internal dating evidence: No sherds of Kraak were found in the British al-Mataf sequence and Hansman published only one, which is not from al-Mataf but from nearby al-Nudūd (Hansman 1985: CPII,t).

Discussion: The complete absence of Kraak from al-Mataf indicates that the site had been abandoned by 1590 AD, if not already by 1575 AD. However, the absence of later 16th and 17th century porcelains from Area 74 (Chapter 2), might suggest that relatively little Kraak porcelain was imported to Ras al-Khaimah at all, despite the fact that it is known from assemblages elsewhere in the Gulf (above) and that it was shipped to Europe in very large quantities.

69. **POLY** (Polychrome Glazed)

Definition and description: One sherd of porcelain with polychrome decoration found at al-Mataf in Phase VI in the Occupation Area.

Body type: Porcelain **Origin:** Far East

70. **VPOLY** (Vietnamese Polychrome)

Definition and description: Regina Krahl identified one sherd of Vietnamese polychrome from Phase Rec in the Occupation Area at al-Mataf (not shown in Table 7 and Table 8).

Body type: Porcelain **Origin:** Far East

71. **ENAM** (Enamelled Porcelain)

Definition and description: This class covers porcelain with a very fine red-coloured enamelled decoration over the glaze.

Body type: Porcelain **Origin:** China

Parallels & external dating evidence: Enamelled porcelains are normally divided into *famille vert* and *famille rose;* only *famille rose* was found at al-Mataf. The technique was introduced between 1720 and 1730 AD (Medley 1976: 245-250).

Internal dating evidence: Two sherds occurred at al-Mataf in Phases IV and Rec at the Mosque. The sherd in Phase IV must be intrusive. Twelve sherds were picked up by the 1994 Survey

72. **MOD** (Modern Porcelain)

Definition and description: This class describes the most recent types of Far Eastern porcelain. It is mass produced, in some cases by machine, and is often decorated with transfers.

Body type: Porcelain **Origin:** Far East

Parallels & external dating evidence: Much of this material might have been manufactured in Japan in the 20th century.

Internal dating evidence: One sherd occurred in Phase VI of the Mosque at al-Mataf (mid/late 16th century) and 92 sherds were picked up by the 1994 Survey indicating that this class became common some time after 1600 AD.

73. **CHIN** (Unclassified Far Eastern)

Definition and description: Used to classify unidentifiable Far Eastern fragments from Kush.

Body type: Stone **Origin:** Far East

Unglazed Classes

Unglazed classes make up 93.46% of the sherds throughout the sequence at al-Mataf and 93.39% at Kush although there is a gradual change in the percentage of glazed classes through time (see Chapter 4). The fact that they are so common makes them potentially an important dating tool, but they first need to be accurately described and classified. Many unglazed classes are represented by only a few sherds, especially at al-Mataf. Such a pattern might reflect increasing transport of unglazed pottery in the 15th century onwards, and may represent low volume imports from numerous production centres in East Africa, South Arabia, and other areas. There is still more work to be done on the unglazed classes from Kush and al-Mataf.

Lack of space means that many of the less important classes receive only a very basic description.

74. **JULFAR** (Julfar Ware)

Definition and description: Julfar ware is a hand-made or slow-wheel-made unglazed pottery used to make cooking pots, bowls and jars. It has a brick-red body firing to black or grey and a coarse fracture. The fabric always contains distinctive frequent, sub-angular, badly-sorted, opaque red platelets between 2 mm and 8 mm.

This class was first reported by de Cardi (de Cardi & Doe 1971: 269) and was more fully described Hansman (1985: 60-66). It was manufactured in Ras al-Khaimah at the back of the fertile plain behind Kush, where abundant wasters and kilns have been found (Stocks 1996: 155-7). The industry continued until about 1969 AD (Dostal 1983: chapter 2. Hansman 1985: 64). It is possible that similar wares were manufactured in other parts of the Musandam Peninsula but these have not yet been defined and described.

Subclasses:

At al-Mataf four sub classes were defined:

JULFAR.1 - white-washed and painted in red.

JULFAR.2 - dark fabric with purple painting but no white wash.

JULFAR.3 - buff coloured body, painted red decoration but no white wash.

JULFAR.4 - thin black body, brittle, no paint or white wash.

At Kush one further subclass was defined:

JULFAR.5 - describes a few sherds of early cooking ware in the Kush sequence that may be Julfar ware but was not securely identified as such.

Body type: Earthen **Origin:** Local

Figs: Fig. 19 to Fig. 25.

Parallels & external dating evidence: Julfar ware has been reported from East Africa, Bahrain, the Eastern Province of Saudi Arabia and Yemen but from contexts less well dated than our own (Chittick 1974: 143a. Larsen 1983: 292. Frifelt 2001: 93-95 'Oman group'. Potts *et al.* 1978: pl 17 250, 251. A. Rougeulle, personal comment).

Internal dating evidence: Recognizable Julfar ware first appears at Kush as single, possibly intrusive sherds in Periods I and II (4th - 8th century). In Periods III and IV as many as six sherds occur in each Phase but it is not until Period V (Phase E-08 - late 11th/early 12th century) that Julfar ware is present in large quantities (*c.* 5% of the total assemblage) (**Fig. 26**). The class occurs throughout the al-Mataf sequence and into the post-al-Mataf period until the 20th century as the most abundant ceramic class in almost all archaeological contexts in Ras al-Khaimah.

Throughout the nine centuries of Julfar-ware production, the class can be subdivided largely on the basis of form. The most common vessels are cooking pots, which make up about 60% of all Julfar ware and are therefore the most useful for archaeological dating purposes. In addition a range of bowl and jar forms are shown from the al-Mataf sequence, along with types from survey assemblages that do not occur at al-Mataf (**Fig. 19** to **Fig. 25**).

The Development of Julfar ware: Study of the Kush and al-Mataf sequences, together with surface assemblages from the 1994 Survey, have allowed us to begin to piece together an outline of the development of the production of Julfar ware. Evidence for the post-al-Mataf period is still rather weak as we still lack an excavated sequence for that time.

The Formative phase (pre-al-Mataf)

(Fig. 19 & Fig. 20)

In the earliest phases at Kush a few crude hand-made sherds occur in a clay very similar to early Julfar ware, this might be termed "proto-Julfar". In Periods I and II some of these may be intrusive but in Periods III and IV it seems likely that they are the result of very low-scale production. It is really in Phase E-07/E-08 at Kush that the earliest true Julfar ware occurs. It is a crude, soft-fired, non-oxidised, thick-walled, burnished ware with occasional incised decoration and stripes of painted decoration on the exterior quite distinct from the later mature production. The forms are roughly-made cooking jars with very variable shapes: CP0.1,2,3 & CP6.1. Through the latter part of the Kush sequence a number of subtle changes occur as the class develops towards more standardised, harder-fired, oxidised, thinner-walled vessels with no paint. By Phase E-10 the development is complete and the classic Julfar ware cooking pot CP1.2 is recognisable.

The Mature phase (al-Mataf)

(**Fig. 21** & **Fig. 22**)

Cooking pot CP1.2 went on to be the most common cooking pot throughout the al-Mataf sequence until it was superseded in Phase VI by CP1.1 (Table 22). During the al-Mataf sequence a number of other significant developments occurred. Firstly the range of forms increased markedly: at the end of the Kush sequence and the beginning of the al-Mataf sequence it is possible to define about 10 distinct Julfar ware types, by Phase III this had risen to 28. Secondly the production of a number of subclasses or variations began in Phase II: white-washed Julfar ware with red decoration (JULFAR.1), dark fabric Julfar with purple painting (JULFAR.2), and thin black-bodied Julfar (JULFAR.4). Together these developments suggest that the class was being produced by an increasingly large number of workshops for an increasingly wide range of functions. The class had also become very much more abundant. In the latter phases at Kush it made up about 6% of the total assemblage, by Phase II at al-Mataf it made up 74.6% of the total assemblage. It was clearly developing into a major industry and it is sherds of Julfar ware from this period that are widely found at sites around the Western Indian Ocean (as mentioned above).

The Late phase (post al-Mataf)

(**Fig. 23**, **Fig. 24**, **Fig. 25**)

During the latter phases at al-Mataf the dynamic development of Julfar ware production seems to have slowed down. No new types or subclasses are found in Phase IV to Phase Rec suggesting that production had stabilised somewhat. For the post-al-Mataf period we do not yet have a excavated sequence from Ras al-Khaimah (or indeed anywhere else in the Gulf) which prevents us from gaining an insight into quantitative changes in the ceramic assemblage. However, analysis of the Phase E-11 assemblage from Kush and surface collections from the 1994 Survey shows that a number of types were introduced after the abandonment of al-Mataf and went on to circulate very widely (**Fig. 23**, **Fig. 24**, **Fig. 25**). The technique and quality of the material continued as before, although it seems that white-washed ware became less common. Many of the post-al-Mataf types have notched rims that appear to have been designed to hold a lid (e.g. **Fig. 23**: CP4.1, CP4.2; **Fig. 25**: B5.1). No such lids were found at al-Mataf, although they are common on the 1994 Survey, and notched rims are also unknown at al-Mataf. It is not clear why ceramic lids began to be used, but it may obviously be related to the introduction of new foods or cooking practices in the post-al-Mataf period.

An excavated sequence through the 17th to 20th century would make it possible to subdivide the post-al-Mataf period into a more refined chronology, but for the moment this is impossible. It is, however, worth pointing out that CP5.1 might represent an intermediate stage soon after the abandonment of al-Mataf, but before the introduction of the CP4 rims (see the discussion in Chapter 2 above). No dating can be suggested for this at the present time.

Cooking Pots

As has been mentioned, cooking pots make up about 60% of Julfar ware production and are therefore important as archaeological dating evidence. Hansman proposed a detailed outline of the development of Julfar-ware cooking pots based on his excavations at al-Mataf and in old Ras al-Khaimah town (Hansman 1985: 60-66) but there is variation within the types he proposes and some changes are required. For example, it was found to be impossible to distinguish between Hansman's forms 14.a, 14.b and 14.c, which have therefore been designated a single type number in this study - CP1.2. The same was true of Hansman's forms 14.d, 14.e, 14.g and 14.h, which have been designated CP1.1 by our study. The distinction between vessels with a more vertical rim and a continuous horizontal ridge (CP1.2) and those with a steeply-angled rim and triangular lugs (CP1.1) is easy to make, even when dealing with fragmentary sherds and appears to correspond to other variables such as body colour and wall thickness. There is still a grey area between the two types; Hansman's 14.d could be classified as CP1.2 in some cases. It seems that Hansman based his typology on too few vessels and in some cases it seems that he designated type numbers to single examples.

Table 21 shows the occurrence of Julfar ware cooking pots through the latter part of the Kush sequence and the al-Mataf sequence. The most significant two types, CP1.2 and CP1.1 overlap chronologically. Table 22 and **Fig. 27** show the relative proportions through the al-Mataf sequence. The first three figures for CP1.2 (namely 0.04%, 9.5% and 4.3%) are to be treated with caution as these are based on very small assemblages.

The general trend is very clear; CP1.2 declines throughout the al-Mataf sequence whilst CP1.1 increases. Taking into consideration residuality, by the end of the al-Mataf sequence CP1.2 had probably gone out of use. What might this change from one type of cooking pot to another mean? It might be a simple stylistic change, or it might be a functional change related to the way cooking was done, or it might represent the decline of one production workshop and the rise of another.

Table 23 presents a revised overview of the development of Julfar ware cooking pots, taking into consideration the evidence from Kush, al-Mataf, and the 1994 Survey as well as the results of Stocks' (1996) survey of the Wadi Haqīl where a number of the later Julfar ware kilns were located.

	Kush					al-Mataf								
	E-06	E-07	E-08	E-09	E-10	PRE	I	II	III	IV	V	VI	REC	Total
CP0.1		1	21	3										25
CP0.2			2	4	6									12
CP0.3					3									3
CP6.1		1		9	2									12
CP1.2					1	2	4	67	128	239	280	124	88	932
CP1.1								18	23	113	59	147	222	582
CP2.1								10	18	36	43	32	27	166
CP1.5								2	7		1	1		11
CP2.2								2	2	3	5	7	6	25
	0	2	23	16	12	2	6	146	314	743	714	706	614	

Table 21: Showing occurrence of the most common types of Julfar ware cooking pots through the Kush /al-Mataf sequence.

	Kush	al-Mataf							
Type	**E-10**	**PRE**	**I**	**II**	**III**	**IV**	**V**	**VI**	**REC**
CP1.2	0.04	9.5	4.3	6.3	6.3	4.0	4.3	1.6	1.2
CP1.1				1.1	0.8	1.5	1.0	1.8	2.9

Table 22: The decline of CP2.1 rim sherds and the increase of CP1.1 rim sherds as a percentage of the total assemblage (Kush and al-Mataf both areas).

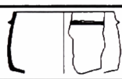
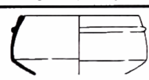
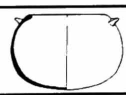
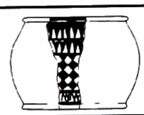
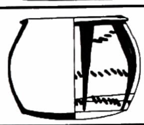
Type No.	Proposed Date	Reference	Illustration	Contexts	Hansman's date	Hansman's notes
CP0.1	11^{th}-13^{th}	Kush T99 unpub.		Table 21	N.A.	N.A.
CP0.2	11^{th}-13^{th}	Kush T13 unpub.		Table 21	N.A.	N.A.
CP0.3	12^{th}-13^{th}	Kush T11 unpub.		Table 21	N.A.	N.A.
CP6.1	12^{th}-13^{th}	Kush T15 unpub.		Table 21	N.A.	N.A.
CP1.2	12^{th} - 15^{th} /16^{th}	Kush T12 unpub.		Table 21	N.A.	N.A.
		Hansman 1985: fig. 14.a		Hansman L II	late 14^{th}/early 15^{th}	horizontal ridge surrounds vessel, rounded bottom
		Hansman 1985: fig. 14.b & 14.c		Hansman L III	15^{th}	little change, rim more rounded
		Hansman 1985: fig. 14.d		Hansman L IV	16^{th}	lug increases in size, rim less vertical
CP1.1	14^{th} - 17^{th}?	Hansman 1985: fig. 14.e		Hansman L V	late 16^{th}	rim less vertical; 'transitional style' with separate, triangular lugs for the first time
		Hansman 1985: fig. 14.g & h		Hansman surface	early 17^{th}	lugs more fully extended, sharper and upturned; rim more bulbous
CP2.1?	14^{th} - 16^{th}	Hansman 1985: fig. 16 j		Hansman Dayyah	early 19^{th}?	maroon painting, rim thickened and rounded
CP5.1	17^{th} - 18^{th} ?	Stocks 1996: fig. 6 1		N.A.	N.A.	N.A.
?	?	Hansman 1985: fig. 16 l.		not at al-Mataf	19^{th} c ?	
CP4 (1-5)	17^{th} -18^{th} and later ?	Hansman 1985: fig. 16 m. Stocks 1996: fig. 5 3, 6 2.		not at al-Mataf	early 20^{th} century?	bevelled rim, everted and slightly troughed (to hold lid?)
		Hansman 1985: Pl 5b2.		not at al-Mataf	20^{th} century	rim more markedly everted; decorative pattern changes

Table 23: Proposed development of Julfar-ware cooking pots.

Julfar ware types

Table 24 lists and describes the most significant Julfar ware types.

Type	Description	Occurrence	Fig.
Bowls.			
B1.1	Curved sided bowl with a vertical thickened rim.	Only al-Mataf	**Fig. 22**
B1.4	Curved sided bowl with a flattened rim	Only al-Mataf	**Fig. 22**
B5.1	Bowls with an everted, troughed rim and curved walls.	Not at al-Mataf or Kush.	**Fig. 25**
B6.1	Large flat bowls with a slightly thickened rim with a triangular profile.	Not at al-Mataf or Kush.	**Fig. 25**
B7.1	Large deep bowls with a thickened rim with a triangular profile.	Not at al-Mataf or Kush.	**Fig. 25**
Cooking Pots.			
CP0.1	Crude, soft fired cooking pot with a sloping, rounded rim with lugs just below the rim (was Kush T99).	See Table 21.	**Fig. 19**
CP0.2	Crudely made cooking pot with a rounded, sloping rim with lug handles (was Kush T13).	See Table 21.	**Fig. 19**
CP0.3	Cooking pot with a sloping slightly squared rim and lug handles (was Kush T11).	See Table 21.	**Fig. 19**
CP1.1	Cooking pot with lug handles and a sloping rim.	See Table 21.	**Fig. 21**
CP1.2	Cooking pot with a nearly vertical slightly squared rim and a continuous ridge below the rim.	See Table 21.	**Fig. 20**, **Fig. 21**
CP1.5	Cooking pot with a slightly thickened rim and lug. Rim often slightly more vertical than CP1.1.	See Table 21.	**Fig. 21**
CP2.1	Large cooking pot with a thickened rim.	See Table 21.	**Fig. 21**
CP2.2	Large cooking pots with a thick wall and a simple in-turned rim.	See Table 21.	**Fig. 21**
CP2.8	Cooking pots with a thickened, inverted rim. Rim slightly thickened and angular.	Not at al-Mataf or Kush.	**Fig. 23**
CP4.1	With no neck and an everted, slightly troughed rim.	Not at al-Mataf or Kush.	**Fig. 23**
CP4.2	With a slight neck and an everted slightly troughed rim. Some painted, some not.	Not at al-Mataf or Kush.	**Fig. 23**
CP4.3	Similar shape to CP4.2 but rim not troughed, thickened and triangular in profile.	Not at al-Mataf or Kush.	**Fig. 23**
CP4.4	Similar to CP4.3, but slightly less vertical and less troughed (was MVS8).	Not at al-Mataf or Kush.	**Fig. 24**
CP4.5	Distinctive almost vertically everted rim (was MVS9).	Not at al-Mataf or Kush.	**Fig. 24**
CP5	Cooking pot with an in-turned rim and no lug.	Not at al-Mataf or Kush.	No fig.
CP5.1	Cooking pot with an in-turned rim with a slight inward curve in the wall and no lug.	Not at al-Mataf or Kush.	**Fig. 24**
CP5.2	Cooking pot with an in-turned rim with no curve and no lug.	Not at al-Mataf or Kush.	**Fig. 24**
CP5.3	Similar to CP5.1 but in-turning not very pronounced – looks like a thickened rim (was MVS6)	Not at al-Mataf or Kush.	**Fig. 24**
CP6.1	Cooking pot with a neck and a slightly everted rim, in some cases with a lug handle.	Only Kush	**Fig. 20**
CP7.1	Wide necked pot with a wide everted rim, often decorated with paint (was MVS1).	Not at al-Mataf or Kush.	**Fig. 24**
Jars.			
J2.1	Large jar with a slightly thickened, slightly flaring rim.	al-Mataf only	**Fig. 22**
J2.3	Spout-handled jar (Hansman 1985: fig 17: c, d, h).	al-Mataf only	**Fig. 22**
J3.1	Large jars with a flattened, everted rim.	Not at al-Mataf or Kush.	**Fig. 25**
J4.1	Large storage jar with a wide, everted rim.	Not at al-Mataf or Kush.	**Fig. 25**
Lids. Vogt (1991: 196) confirms that no lids were found at al-Mataf.			
Lid		Not at al-Mataf or Kush.	**Fig. 25**
Pots.			
P1.3	Pot with an everted, slightly troughed rim.	Not at al-Mataf or Kush.	**Fig. 25**
P2.2	Pot with a non-thickened but everted rim.	Not at al-Mataf or Kush.	**Fig. 25**

Table 24: Descriptions and occurrence of the most significant Julfar ware types mentioned in the text .

75. WHITE (White Ware)

Definition and description: A creamy white unglazed ware (5Y 8/6) with a washed surface. The clay is normally very soft, light, and porous and will sometimes draw on a blackboard. The fracture is smooth and there are few inclusions. The exterior surfaces are very often decorated with incisions or comb scratches or, more rarely, moulded decoration. The vessels are almost without exception closed forms and include some water filters. There were some difficulties in creating a consistent distinction between this class and the coarser varieties of Eggshell (EGG) based on fabric. For this reason WHITE was subdivided into the following sub-classes:

WHITE.C sherds thicker than 6 mm or thicker than 5 mm with a coarse fabric.

WHITE.F sherds between 2.5 and 5 or 6 mm.

Sherds thinner than 2.5 mm were classified as EGG.

WHITE.NRE - This material was not re-examined during the final reclassification and is not subdivided according to the scheme above.

Body type: Earthen **Origin:** Iran & Iraq?

Parallels & external dating evidence: This class is reported from all Islamic-period sites in the region where it is normally very abundant. The material from Sīrjān is the most comprehensively studied by Morgan and Leatherby (1987: 83-102) who proposed a classification based on form and decoration. Unfortunately the Sīrjān material is not well dated. Morgan and Leatherby concluded that there are very few parallels to be found outside the immediate vicinity of the town, even with places where there are close similarities in the glazed wares (*ibid.*: 83). They further suggest that individual potters and potteries made material in their own styles in different parts of the site suggesting a very localised manufacturing and distribution system (*ibid.*).

This class of material is sometimes referred to as 'creamware' or 'fine buff wares' (Horton 1996: 297. Larsen 1983: 281).

Types: 109 and 110 are the most common at al-Mataf **(Fig. 28)**.

Internal dating evidence: This class was the second most abundant at al-Mataf after Julfar ware. It was abundant on the 1994 Survey but, until a refined chronology is available, it is of relatively little value as a dating tool as it is present in almost all assemblages at both Kush, al-Mataf and on many survey sites. Table 25 shows the occurrence of WHITE through the two sequences. With the exception of Phases Pre and I at al-Mataf, which must be anomalies caused by the small size of these assemblages, a general pattern is clear. This is also shown in graph form in **Fig. 29**, where Phases Pre and I have been omitted. WHITE was clearly present in very small quantities very early in the Kush sequence, but it was only in Phase E-06 (9th to 11th century) that it became common. It increased as a proportion of the assemblages until it reached its peak of circulation in Phase III at al-Mataf (late 15th/16th century) after which time it began to decline.

We can examine this in more detail in Table 26 (also in **Fig. 30**) where it is clear that the finer white classes EGG and WHITE.F are the classes that become common in Phase E-06. As the distinction between WHITE.F and WHITE.C was not made at al-Mataf we cannot trace the later development, but it seems likely that it was the coarser wares that predominated in the al-Mataf sequence.

Much WHITE has incised or moulded decoration. At Kush it was found that moulded decoration did not occur before Phase E-07, after which time it was present in all Phases. A more detailed study of the decorative schemes will be presented in the final Kush pottery report.

Discussion: It is presumed that WHITE was manufactured outside Ras al-Khaimah where no evidence for such fine clays has been found.

E-01	W-04	E-02	E-03	E-04	E-05	E-06	E-07	E-08	E-09
0.13	0.66	0.67	0.89	1.07	1.64	7.57	6.72	10.2	11.3
E-10	**PRE**	**I**	**II**	**III**	**IV**	**V**	**VI**	**REC**	**E-11**
7.39	43.8	60.6	14.5	19.2	13.1	13.4	11.6	8.59	6.71

Table 25: Occurrence of WHITE (including WHITE.C & WHITE.F) through the Kush and al-Mataf sequences (% of total sherd count by Phase).

	E-01	W-04	E-02	E-03	E-04	E-05	E-06	E-07	E-08	E-09	E-10
WHITE.C	0.13	0.66	0.67	0.89	0.8		0.47	0.97	2.15	3.36	2.72
WHITE.F					0.27	1.64	7.1	5.75	8.03	7.96	4.67
EGG		0.33				2.73	17.2	9.57	6.07	4.26	1.76

Table 26: WHITE.C, WHITE.F and EGG through the Kush sequence (% of total assemblage by sherd count).

76. **BEARTH** (Black-Fired Earthenware)

Definition and description: This is a coarse earthenware with a rough fracture and numerous white inclusions. The body is well fired, which gives it a metallic sound. It has been fired in reducing conditions to give a black appearance. The forms are usually large storage vessels and the surface of body sherds is usually covered with broad flat ribs or raised panels about one centimetre wide. Small sherds can be confused with reduced Julfar ware and the class can also easily be confused with LISV.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: This class seems to be closely related to the tradition of 'thick black ware' (*céramique noir épaisse*), which occurs at Mlayḥa and al-Dūr from the 2nd century B.C. until at least the 4th century AD (Mouton 1992: 103, 147), but it is impossible to be certain of this identification in most cases.

Internal dating evidence: One sherd was recorded from al-Mataf, 28 were recorded from the 1994 Survey and 48 in the early areas at Hulaylah (Kennet 1994: ware 16). Seven sherds were found at Kush, but only two were from Phases W-04 and E-04 in the phased sequence (7th - early 9th century). The identification of the Kush sherds is more certain than those from the survey.

Discussion: Further work is needed on the precise definition of this class. If all of the sherds from the 1994 Survey are actually true *céramique noir épaisse* then a total of five survey areas would have yielded evidence of activity in the PIR period (Kennet 2002a: 158-159).

77. **LISV** (Large Incised Storage Vessels)

Definition and description: These vessels generally have a heavy, very well fired and strong body with a rough fracture, and a metallic sound. The fracture is often sub-conchoidal. There are a number of different fabrics within the class, suggesting more than one production centre. The surface is usually washed or lightly burnished and the walls are normally thicker than 10 mm. The exterior is decorated with a range of deeply-incised wavy lines, crosses, dots, and sometimes cordon decoration. The forms are large storage jars.

Body type: Earthen **Origin:** Iran or local.

Fig: Fig. 31.

Parallels & external dating evidence: Similar vessels have been found at Jazīrat al-Ghanem in the northern Musandam peninsula where they were associated with FOPW (de Cardi 1985: fig. 3 175. de Cardi 1975: fig. 8 1 5 9. Simpson 1992: 258). They have also been found in contexts broadly datable to the Sasanian/Early Islamic period at sites in Iran such as Hājīābād (Azarnoush 1994: 199, fig. 175 c-f), Pasagarde (Stronach 1978: fig. 124, 5), Qasr-i Abu Nasr (Whitcomb 1985: figs. 17, 18, 40-45, 77-79), Tepe Yahya (Lamberg-Karlovsky 1970: fig. 3 B, D), Sīrjān (Morgan & Leatherby 1987: group 28), Ghubayrā (Bivar 2000: E21/71-59, E21/71-62, E21/71-64, E21/71-67, E21/71-69), and Qal'a-ye Dukhtar (Huff 1976: Abb. 6, c; Taf. 46, 4; Taf. 48, 2. Huff & Gignoux 1978: Abb. 24-31). Simpson has pointed out further parallels from Kangavar (Simpson 1992: 245). Related vessels have also turned up at Ras Hafun in Somalia (Smith & Wright 1988: 123, fig. 7 L M) and in the Comoro Islands (Wright 1984: fig. 15e). The pale green earthenware jars found and manufactured at Siraf do not seem to be related to LISV (Tampoe 1989: 21-23).

As no examples can be found in the 3rd and 4th-century AD material from area F at al-Dūr (Mouton 1992. Lecomte 1993) the class seems most likely to originate after that date. At Khatt it did not occur in a small 5th-century context, but one sherd did occur in the overlying deposit (Kennet 1998: fig. 5 6). Its occurrence in what are probably 9th or 10th century contexts at ᶜAlī in Bahrain and at site 42/43 at ᶜĀrja in Oman indicate that it continued in use well into the Abbasid period (Costa & Wilkinson 1987: fig. 101a. Sasaki 1990: fig. 6 33).

Internal dating evidence: This class occurred in almost all Phases at Kush, although it was most abundant in Phases up to and including E-04 (late 8th/early 9th century) after which it makes up a smaller proportion of most assemblages (**Fig. 32**). This probably indicates that sherds from above E-04 are residual. LISV also occurs at Hulaylah (Kennet 1994: ware 17), and 16 sherds were picked up by the 1994 Survey.

78. **RBSLIP** (Red-Black Slip)

Definition and description: This class has a fine, creamy white fabric which weathers irregularly. It is covered both inside and out with a crude brick red or black slip and appears to be quite similar to the Iron Age slipped tradition (Magee 1996: 240-6).

Body type: Earthen **Origin:** Local?

Parallels & external dating evidence: This appears to be a continuation of a local ceramic tradition which dates back to the Iron Age and continues, in diminishing quantities, throughout the pre-Islamic periods (Mouton 1992: 146). There is no independent evidence for dating the forms and development of the class.

Internal dating evidence: The class does not occur at Kush and only one sherd occurred at al-Mataf, which is probably either a misidentification or a stray sherd imported with building material. At Hulaylah 29 sherds occurred in areas that also yielded Sasanian/Early Islamic or Abbasid material (Kennet 1994: ware 22). The precise definition of this class and it dating still need to be resolved.

79. **LIME** (Lime-Tempered)

Definition and description: These are large storage jars with an in-turned rim. They are made of a distinctive, thick (8 mm), reddish buff fabric with frequent, large (1-4 mm), sub-rounded, white lime inclusions. The clay is very sandy with a high percentage (20-30%) of badly sorted, rounded quartz grains, which range from 0.1 to 1 mm in size.

Body type: Earthen **Origin:** Bahrain?

Parallels & external dating evidence: This class has been recorded in Bahrain where it is dated to the late Islamic period (Larsen 1983: 292, fig. 69 a b. Frifelt 2001: fig. 90); it has similarities to many of the typical Bahraini fabrics and may have been manufactured there.

Types: 105 is the most common **(Fig. 31)**.

Internal dating evidence: At al-Mataf 495 sherds of LIME were found, it occurs from Phase II of the Mosque onwards (14th/15th century). It appears to become increasingly common through Phases IV and VI. It does not occur at Kush or in Area 74 – it can therefore be dated to the al-Mataf period (late 14th to late 16th century). This class occurred at Hulaylah (Kennet 1994: ware 35) and 40 sherds were picked up by the 1994 Survey. The National Museum of Ras al-Khaimah holds a complete example.

80. **HONEY** (Honeycomb)

Definition and description: This class has a strong, sandy fabric with a pale yellow colour (2.5Y 8/4) and a rough fracture. It is usually around 10 - 14 mm thick. There are no obvious inclusions in the clay except for very fine sand and frequent air holes. The exterior is unslipped and unburnished. The distinguishing feature is the 'honeycomb' pattern on the exterior, which is made by pressing fingertips into surface whilst the clay is still moist. The forms seem to be large storage vessels.

Body type: Earthen **Origin:** Iraq

Fig: Fig. 33.

Parallels & external dating evidence: This class is well known from surveys and excavations in Iraq and along the Gulf coast (e.g. Andrae & Lenzen 1933: 102-104, taf. 56 h. Adams 1970: table 1. Williamson 1972: 101, type 4. Finster & Schmidt 1976: taf. 52 a e f, 53 h i, 55 a b, 60 b, 61 a. Northedge 1985: fig. 4 1. Northedge & Falkner 1987: pl. XXXa. Northedge *et al.* 1988: pl. XIII a. Kervran & Hiebert 1991: 342. Boucharlat *et al.* 1987: fig. 73 9).

Honeycomb has long been regarded as a type fossil of the Sasanian period (Adams 1981: 234). However Simpson, after reviewing the available evidence, points out that it has not yet occurred in a well-dated Sasanian context and that its absence from the Choche sequence suggests that it should rather be used as a diagnostic type of the Early Islamic period (Simpson 1992: 296). The only dated context known to the present author where Honeycomb has occurred is at Tulūl al-Ukhayḍir where it was associated, on a single-phase site, with three coins dated from the late 7th to the early 8th century (Finster & Schmidt 1976: 148). At ᶜĀna it occurred in what are possibly late Sasanian, but could also be Umayyad layers (Northedge *et al.* 1988: fig. 38 18). The class has been collected from all areas of Samarra suggesting very strongly that it also continued to be used during the 9th century (Northedge & Falkner 1987: 163, note 62). Honeycomb's absence from the 7th/8th-century site of al-Quṣūr in Kuwait might suggest that Honeycomb was not distributed in the Gulf at that time (Patitucci & Uggeri 1985. Kennet 1991).

Internal dating evidence: Seven sherds were found at Kush but only one occurred in the phased sequence (Phase E-05: late 8th/early 9th century). Two sherds were picked up by the 1994 Survey. Honeycomb also occurred at Hulaylah (Kennet 1994: ware 36).

81. **HONEYF** (Honeycomb Fabric)

Definition and description: A number of sherds occurred in a fabric identical to that of Honeycomb, but lacking the distinctive surface decoration. As it seems that 'honeycomb' decoration does not necessarily cover the entirety of the vessel these sherds could equally be Honeycomb or late Sasanian 'smeared ware'.

Body type: Earthen **Origin:** Iraq?

Parallels & external dating evidence: As HONEY.

Internal dating evidence: Nine sherds of this class were found at Hulaylah where two rims are illustrated (Kennet 1994: class 49); three sherds were picked up by the 1994 Survey.

82. **CHOC** (Chocolate Chip / Black Angular Inclusions)

Definition and description: These vessels are thick-walled (1-2 cm), large storage jars. The fabric is most often grey but can also be buff, and is distinguished by frequent, large (1-7 mm), sub-angular, black inclusions. The exterior is frequently decorated with incised decoration.

Body type: Earthen **Origin:** Local ?

Parallels & external dating evidence: Potts described a type of pottery called 'tan chocolate-chip' from the Eastern Province Survey in Saudi Arabia where it was used as a type fossil for Sasanian occupation based on parallels with Ctesiphon, Qasr-i Abu Nasr, Nuzi, and Bahrain (Potts *et al.* 1978: 12). The fabric of CHOC does not accord with the material found in Mesopotamia and such a ware has not, so far, occurred in Sasanian contexts in Ras al-Khaimah and no other surveys or excavations have reported it from Sasanian contexts in East Arabia. CHOC, as defined here, is clearly a much later ware. It could be that the ware found by Potts is this same late material, wrongly dated to the

Sasanian period, or it could be that such a ware does exist in the Sasanian period in a limited area of Eastern Arabia.

Internal dating evidence: Initially 31 sherds of this class were picked up at Hulaylah in the early occupation areas (Kennet 1994: class 39, fig. 5). However, the total absence of sherds from Kush indicates that it did not circulate in Ras al-Khaimah in the Sasanian or Early Islamic periods. Only one sherd was found at al-Mataf, in Phase Rec of the Mosque (not shown in Table 7 and Table 8). In addition, three sherds were picked up in Area 74 and it has also been found associated with recent occupation at a number of other sites. The evidence confirms that this class dates to the post-al-Mataf period and can therefore been used as a post-al-Mataf type fossil. The sherds at Hulaylah must result from later occupation in the early areas.

83. **WPINK** (Pink & White)

Definition and description: A well-fired body, light, with a coarse fracture and dense, well-sorted orange red inclusions up to 3 mm which might be grog. The body is a pinky red but the surface is lightened by a salt wash to a pale creamy white with a slightly green tinge. This gives the class a very distinctive look. Vessels seem to be mostly jars but some bowls might be present.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Altogether 506 sherds occurred at al-Mataf and 23 on the 1994 Survey, whilst none were found at Kush. The phased seriation tables from al-Mataf (Table 7 and Table 8) shows that WPINK was common at al-Mataf only until Phase V (16th century) after which it declined rapidly. WPINK can therefore be dated securely to the al-Mataf period and can be used as a chronological marker for to 14th to 16th century.

84. **BUFF** (Buff)

Definition and description: This class is well fired with a well-levigated fabric and a fine sandpaper-like texture to the surface. The body is buff with a slightly orange-red tint; sometimes the core is a redder colour than the surface. Vessels seem to be jars and bowls.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: BUFF does not occur at al-Mataf or Kush, but 62 sherds were picked up by the 1994 Survey including two in Area 74, strongly suggesting a post-al-Mataf date for this class. This class has therefore been used as a post-al-Mataf chronological marker.

85. **THIN** (Thin Black)

Definition and description: Very thin (2-3 mm) hand-made ware with a brittle feel. The fabric contains small black angular grits and has a rough fracture. It sometimes has traces of combing on the surface.

This is very similar to a crude and reduced Julfar ware and may in fact be a product from the same area in Ras al-Khaimah.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: No sherds were picked up by the 1994 Survey and none occur at Kush. Twenty-eight sherds occurred at al-Mataf from Phase IV of the Mosque onwards (16th century).

86. **LSANDY** (Large Sandy White Storage)

Definition and description: The body is a pinky colour with a smooth surface and a rough fracture. There are signs of vegetable temper. The body is usually around 10 mm thick and there is often marked ribbing on the interior. The body is often washed on the exterior to give a smooth feel. The forms are similar to LIME but the fabric is different with fewer lime inclusions.

Body type: Earthen **Origin:** Iraq?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: This class was quite common at al-Mataf where 136 sherds were found from Phase I of the Mosque onwards (late 14th century). It did not occur at Kush but 105 sherds were picked up by the 1994 Survey, including two from Area 74.

87. **PROTO** (Proto Julfar)

Definition and description: A hand-made, thick body (15 mm) with a very light specific gravity caused by numerous air holes. Colour is a light brown (5YR 8-6/4). It is hard fired with a very rough fracture containing numerous angular red inclusions similar to JULFAR. The surface has been lightly burnished.

Body type: Earthen **Origin:** Local

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: No sherds were found at al-Mataf. This class is very similar to some of the early JULFAR sherds found at Kush and may represent the earliest productions at the local kilns. Twenty-six sherds were found by the 1994 Survey in Areas 2, 37 and 93, in two cases it was associated with Hatched or Monochrome Green Sgraffiatos (HGRAF, GGRAF).

Discussion: These sherds were studied in 1994 before JULFAR.5 had been identified from Kush. PROTO seems to be closely related to JULFAR.5, though somewhat harder fired. It may represent the products of another kiln of the same period.

88. **EGG** (Eggshell)

Definition and description: A very fine, unglazed, white or pale yellowish (7.5Y 8/2) ware with a wafer-thin body (max. 3 mm) and a smooth surface. The clay is well levigated with no visible inclusions and a smooth or sub-conchoidal fracture. Vessels tend to be closed, small jars and jugs, possibly water filters.

Body type: Earthen **Origin:** Iraq

EGG.NRE - This material was not re-examined during the final reclassification.

Parallels & external dating evidence: The forms are similar to those illustrated from Susa, where the appearance of this class was dated to the middle of the 8th century (Kervran 1977: 89, 152, fig. 30 1 & 2), although this may be too early. The ᶜĀna sequence has demonstrated that the type of eggshell with flat rouletted panels is later than the type with deeply incised furrows and dot-and-circle decoration which is found at Tulūl al-Ukhayḍir and al-Ukhayḍir (Northedge *et al.* 1988: 82, 91-92, fig. 40 1-3. Finster & Schmidt 1976: abb. 51d. al-Husseini 1966: pl. 15). This might suggest a 9th-century and later date.

The eggshell ware discussed here is distinct from the Selucid and Parthian tradition, which may have been a technical ancestor of the Islamic ware but is separated by an apparent stop in production during the Sasanian period (e.g. Valtz 1984: 43-4, fig. 3).

Types: 67 and 68 are the most common (**Fig. 28**).

Internal dating evidence: Altogether 2,319 sherds occur in the phased sequence at Kush. It first occurs as an isolated, possibly intrusive, sherd in Phase W-04 but becomes common only after Phase E-05 (late 8th/early 9th century). It reached its peak in Phase E-06 where it made up 17.2% of the assemblage and then dropped off quite suddenly (Table 27). This is a similar chronological profile to YBTIN, which would support a 9th-century date for the introduction of Eggshell at Kush.

Only one sherd was found on the 1994 Survey and two were picked up at Hulaylah (Kennet 1994: class 92). Its rarity in surface assemblages may be caused by its fragility.

89. **RED.EGG** (Red Eggshell)

Definition and description: This is an eggshell-like, very thin-walled ware made of a much harder-fired fabric with a distinctive reddish core (2.5YR 7/6) and a pale-yellow slip on the interior and exterior (5Y 8/3). The vessels appear to be wheel made rather than mould made.

Body type: Earthen **Origin:** ?

Parallels & external dating evidence: None.

Internal dating evidence: With a single exception all of the sherds in the phased sequence come from Phase E-06 (9th to 11th century) suggesting that this class had a very limited lifespan at Kush.

Discussion: Many of the sherds are from contexts 1811 and 1812, and may be from the same vessel.

90. **FOPW** (Fine Orange Painted Ware)

Definition and description: This is a wheel-made and well fired, fine-bodied earthenware up to 4 mm thick. It has as smooth fracture and a reddish-yellow body (5YR 6/8), with a thin red slip or paint. Very fine angular inclusions are visible. Designs are painted on the exterior in black paint. Forms are fine beakers with a slightly flaring vertical rim. The exterior of the beaker (Type 89) often has distinct vertical burnishing marks on the lower portion of the vessel.

FOPW.2: A sub group of this class was defined. It is similar to FOPW but not nearly so fine and lighter in colour (5YR 7/8). The slip is a browner colour (5YR 7/4) and is not applied on the interior. It is more variable and rarer than FOPW.

Body type: Earthen **Origin:** Iran

Fig: Fig. 34.

Parallels & external dating evidence: This class is known either as 'Fine Orange Ware with Painted Decoration' (Whitehouse & Williamson 1973: 38) or 'Namord' ware (Sajjadi 1989). Similar material was first reported by Stein (1937: 175 "superior burnished red ware") and has since been found at numerous sites such as Tepe Yahya

E-01	W-04	E-02	E-03	E-04	E-05	E-06	E-07	E-08	E-09	E-10	E-11
	0.33				2.73	17.2	9.57	6.07	4.26	1.76	2.58

Table 27: Occurrence of Eggshell through the Kush sequence as % of sherd count.

(Lamberg-Karlovsky 1970: fig.4) and Jazīrat al-Ghanem (de Cardi 1972), at al-Dūr (Mouton 1992: 129), at Mleiha (Benoist *et al.* 2003: fig. 9 2-3) in Fārs, Kirmān, Baluchistan, and the northern tip of the Oman Peninsula (e.g. Williamson 1972: 104. Whitehouse & Williamson 1973: fig. 6), Qana' in Yemen in contexts datable to the late 2nd to 4th century (Sedov 1996: 21-23, fig. 6 2-7), and at Qalaᶜat al-Bahrain (Højland & Andersen 1997: 213-215).

Potts has recently reviewed the dating evidence from al-Dūr, which is less than 50 km from Kush. He has proposed a subdivision into an early variety (1st/early 2nd AD) and a late variety (3rd AD) (Potts 1998). The dating of the later group is based on its occurrence in Period I deposits in Area F at al-Dūr (Lecomte 1993: 200). However, Potts' dating can only be taken as a *terminus post quem* as the evidence he cites for FOPW not continuing into the 4th century is its absence from the Period III graves in Area F at al-Dūr (Potts 1998: 209). In fact there may be many other reasons for the absence of FOPW from such culturally-specific archaeological contexts and it is therefore quite possible that FOPW continued in use into the 4th century AD and later. This is important as FOPW is present in the earliest Phases in the Kush sequence.

Internal dating evidence: The 34 sherds from the Kush phased sequence can be placed in Potts' later group; fifteen of them were found in the earliest Phase (W-01) datable to the 4th or 5th century. FOPW occurs in Periods I and II at Kush, with three residual sherds in later levels. FOPW.2, though much less common, appears to follow a similar pattern.

91. **CLINKY**[7] (Clinky Fired Earthenware)

Definition and description: These sherds are hard fired with a sub-conchoidal fracture. The surface is generally darker and less red than the core, varying from weak red (2.5YR 6/3) to dark reddish grey (2.5YR 5/1), whilst the core is red (2.5YR 6/8-5/6). The outer surface is rough and slightly pitted by air holes, the surface is marked by small inclusions of recrystallized lime, which normally indicates a high firing temperature. Some vessels are covered with a black or cream wash or thin slip, which tends to flake off and vertical shaving is often visible on the lower portion of the outside of some vessels. The body is usually 7-8 mm thick. Forms seem to be mixed jars and bowls. The sherds make a metallic clinky sound when tapped together.

The class has a similar fabric and firing to LISV.

Body type: Earthen **Origin:** Iran or local?

Parallels & external dating evidence: It has not been possible to find this class clearly defined and described elsewhere. There are no parallels with the pre-Sasanian material from Mlayḥa and al-Dūr although Mouton's '*céramique fine*' could be said to have certain elements in common (Mouton 1992: 97, 129). The same could be said for the 'Red earthenware' and 'Brittle ware' described from Siraf (Tampoe 1989: 11-15, figs. 1-9). The types are similar to examples from Sasanian contexts in Mesopotamia and the Gulf.

Types: Types 81 and 86 are the most common. The types are shown in **Fig. 35**.

Type 81	A jar with a simple everted rim. This type has been found in contexts probably datable to the 5th century at Khatt (Kennet 1998: fig. 5, 11 12, fig. 6, 19) and was also picked up by Whitcomb on Sasanian sites in the Bushire Peninsula (Whitcomb 1987: fig. D m).
Type 86	Small jar with a triangular rim.
Type 87	Pitcher with a single handle and a flattened rim designed for pouring. Two complete examples were found in a 5th-century context at Khatt (Kennet 1998: fig. 6, 20 21). The same form has been found in a different fabric in late Sasanian contexts in Mesopotamia and elsewhere (e.g. Kawamata 1991: fig. 21, 69 & fig. 25. Lecomte 1993: fig. 9, 10. Moorey 1978: SP-7/8 15. Venco Ricciardi 1970/1: figs. 89-91. Whitcomb 1985: fig. 76 g,i).

Internal dating evidence: At Hulaylah this class was included amongst 'fine bodied coarse ware', which was associated with pottery of Sasanian to Early Islamic date (Kennet 1994: ware 37). As noted above, similar vessels were also found in 5th century contexts at Khatt (Kennet 1998: fig. 5, 11 12, fig. 6, 19). CLINKY occurs at Kush from Phase W-01 to Phase E-03 or E-04 (4th to 7th/8th century), with a few residual sherds in later Phases. It is most abundant in Period I, especially in Phase W-04 and can therefore clearly be dated to the late Sasanian period. Eleven sherds were picked up by the 1994 Survey where it has been used as a chronological marker of Sasanian-period occupation.

Discussion: There is an important relationship between CLINKY and SMAG: the two classes are very similar in terms of fabric and firing technique, the main difference being the degree of oxidisation, and the forms. CLINKY is also slightly harder fired than SMAG and has finer inclusions.

During Period I at Kush CLINKY was the more common of the two classes, some SMAG sherds do occur in these layers but their forms tend to be less complex than those in later levels. During Period II the two classes overlap, with SMAG being the most common. By Period III CLINKY had probably ceased to circulate but SMAG remained in circulation possibly as late as Phase E-08.

7 This class is not related to the class of pottery called 'Clinky' by Ghirshman (Haerinck 1983: 41-2).

92. **FLAKEY** (Flakey Earthenware)

Definition and description: These are brittle, thin-walled jars (c. 6 mm) of a well-levigated clay with a sub-conchoidal fracture. They are hard fired with occasional red or black angular platelets quite similar to those seen in JULFAR. The fabric is a reddish yellow (7.5YR 8/6). The surface is covered with a distinctive matt-red slip or paint with a rough surface, which flakes off easily. Horizontal bands of incised lines seem to be common. Vessels are jars with wide mouths.

Body type: Earthen **Origin:** Iran or local?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Two sherds occur in Phase E-03 at Kush (7th/8th century); none were picked up by the 1994 Survey.

93. **TORP** (Torpedo Jars)

Definition and description: The fabric is hard-fired, reddish-yellow (7.5YR 8/6) to pale yellow (2.5Y 8/4) and very sandy, with very dense angular sand grains c. 0.1 mm. The surface is lightened with a salt-water slip and has a smooth but slightly sandy feel. The interior is most often coated with bitumen.

Vessels are thick-walled (12 mm) large jars with a gently sloping shoulder and a thickened, rounded rim; ribbing is common on the exterior.

Body type: Earthen **Origin:** Iraq

Parallels & external dating evidence: These vessels are known as 'Torpedo jars' or 'ring-necked handle-less storage jars' (Simpson 1992: 291). They have a lengthy typological development from the Parthian to the early Abbasid period and are found throughout Mesopotamia and the Gulf (*ibid.*: 292). Torpedo jars have also turned up in levels dated to between the 3rd and the 5th century at Ras Hafun in Somalia (Smith & Wright 1988: fig. 9 a-h).

Types: Type 74 is the most common **(Fig. 36)**.

Internal dating evidence: Twenty-five sherds occur at Kush in the phased sequence, from Phase W-03 (5th/6th century) to the end of the sequence. They were most common between Phases W-03 and E-04. No sherds were picked up by the 1994 Survey.

94. **SMAG** (Small Grey Vessels)

Definition and description: Fabric colour is dark grey (N 4/1) but some vessels are oxidised to a red (2.5YR 6/8). The fabric is thin walled (3-4 mm), very hard fired and dense, and resembles that of LISV and CLINKY in some respects. Inclusions are quite varied. The forms are mostly small jars with complex rims.

Body type: Earthen **Origin:** Iran

Parallels & external dating evidence: Parallels can be found in late Sasanian and Early Islamic assemblages from Iran and the Gulf (e.g. Lamberg-Karlovsky 1970: fig. 3 b. Stronach 1978: fig. 124 6. Whitcomb 1987: fig. D c q, E n, H n. Lecomte 1993: fig. 9 1, 2-8). The closest forms are those found in late or post -Sasanian contexts at Suhar, but Kervran describes these as 'rosée' (Kervran & Hiebert 1991: fig. 7 1-5). Broadly similar vessels were also retrieved from a pit dated to the 3rd century AD at Tal-i Malyan (Alden 1978: fig. 6 6,7,9-12). There are other possible parallels from Hājīābād (e.g. Azarnoush 1994: fig. 175: a, b, g, h) though these need to be checked against accurate descriptions of the fabrics.

The fabric seems to be similar to the 'Brittle ware' found, but apparently not manufactured, at Siraf, though the forms seem unrelated (Tampoe 1989: 14-15, fig. 9). Williamson mentions a similar 'hard fired unglazed brittle ware' that apparently first appeared in Umayyad levels at Siraf (Williamson 1972: type 5).

Internal dating evidence: A total of 105 rim sherds of SMAG occur at Kush from all through the sequence, but they are most abundant between Phases W-04 and E-07 or E-08 (7th/8th - late 11th/early 12th century) where they make up around 0.5% of the total sherd assemblage, in some cases more. The sherds above phase E-04 are likely to be residual. This occurrence suggests a date slightly later than that of CLINKY in the very late Sasanian to Early Islamic period. The SMAG rim forms in Period I tend to be less intricate than those in later levels.

Types: Vessels tend to be small, narrow-necked jars and jugs with complex forms. It is difficult to define precise types as the rim forms tend to be quite variable. The most common are shown in **Fig. 37**.

Type 4	Small closed jar with 'S' shaped rim.
Type 58	Short-necked jar with a thickened rounded or triangular rim.
Type 75	Small, vertical-necked jar with an elaborate rim and neck. The neck is pinched into a pointed ridge.
Type 76	Very similar to type 75, a small jar with a short, vertical neck which steps in. The rim is thickened or rolled.

Discussion: The similarities between the fabric of SMAG, LISV and CLINKY might indicate a similar production centre or region, or it might indicate a technical fashion of the late Sasanian and Early Islamic period. For the chronological relationship between SMAG and CLINKY see the discussion under CLINKY .

95. **SPOT** (Spotty ware)

Definition and description: This is a very friable, notably light-weight, cream or pale olive (5Y 6/3) coloured ware with abundant air holes and dense, badly-sorted, angular, black inclusions up to 5 mm in size. The body is normally between 8 and 10 mm in thickness. The fracture is rough and the surface is often covered with a pale slip. The forms are normally jars or pots, with rare bowls. A further two sub-groups have been defined: Coarse Spotty (SPOT.C) and Fine Spotty (SPOT.F):

SPOT.C As above but the body thickness is normally between 10 and 15 mm and the angular black inclusions are sometimes red. The shoulder of the vessels is often decorated with single incised wavy lines and incised comb lines.

SPOT.F Body thickness between 4 and 8 mm. The fabric is more variable than C. SPOT, the inclusions are mainly black and many are around 1 mm in size. The fabric can be a little lighter and more yellow (to 2.5Y 8/4 pale yellow). Many sherds are burned to a black or reddish colour on the exterior, suggesting that they have been used for cooking. Some sherds are decorated with fine incised lines.

Body type: Earthen **Origin:** Local?

Parallels & external dating evidence: No similar ware has been reported from elsewhere.

Types: Fig. 38, very few rim sherds were recovered, none at all from SPOT.C.

Internal dating evidence: SPOT began to circulate from Phase E-06 (9th - 11th century) onwards, with only a single sherd of SPOT.C occurring in Phases E-04 and E-05. There appears to have been a slow transition from SPOT.C, which was predominant in the earlier Phases, towards SPOT.F, which was predominant from Phase E-08 (late 11th/early 12th century) onwards.

Discussion: The black inclusions are similar to those found in Julfar ware and might suggest a local provenance for this ware. This might also suggest that SPOT was a predecessor of JULFAR.

Along with WAPO, SPOT represents one of the few coarse wares that can be dated to the 12th and 13th centuries. Its date range is similar to WAPO, though it appears to have begun to circulate somewhat earlier: it is also much more abundant than WAPO. Its absence from the 1994 Survey assemblages is confirmation of the lack of occupation on the plains at this time, but it may also be due, in part, to the extreme friability of SPOT, which would make it difficult for sherds to survive for long in surface contacts.

96. **WAPO** (Cream Pots with Incised Wavy Decoration)

Definition and description: The fabric is quite varied, most commonly it is pale yellow (2.5Y 8/2) with a rough fracture with common, small, angular, black inclusions that give the surface a slightly speckled appearance. Some sherds have many small air holes, some have lime and quartz inclusions and a more variable fracture. The ware tends to be well fired, though not as strong or high-fired as CLINKY or LISV. The core tends to be a little pinker than the surface. There is no systematic surface treatment, most sherds seem to have been washed or wiped and a few have been treated with a salt-water slip. Nonetheless the class, which is probably more of a 'tradition' than a ware, has a distinctive creamy, well-finished look with a distinct range of forms and surface decoration, as shown in **Fig. 39**. All vessels are large, wheel-made jars with incised wavy decoration on the exterior below the rim or shoulder.

Body type: Earthen **Origin:** Local?

Parallels & external dating evidence: The only external parallel it has been possible to find is a jar from Banbhore in Pakistan (Khan 1960: 36, middle jar, bottom of page).

Types: 1 (**Fig. 39**).

Internal dating evidence: Thirty-six sherds of WAPO occur between Phase E-07 and E-11 at Kush, being most common in Phases E-10 and E-11. This suggests a 12th and 13th-century date.

Discussion: WAPO is important as it represents, along with SPOT, one of the few coarse wares that can be reliably dated to the 12th/13th centuries.

97. **REDSPECK** (Red Speckled Ware)

Definition and description: This is a medium fired reddish yellow (5YR 7/6 - 6/8) fabric with a coarse fracture and numerous varied angular inclusions (0.1 to 2mm) including red angular platelets similar to those found in JULFAR. The class is pinker and less crumbly than Julfar ware. The surface is sometimes smoothed to give a flesh-like texture which is pitted with frequent angular and rounded holes up to 1.5 mm caused by organic temper and other inclusions. The class is wheel turned and well made. Traces of turning are visible on the surface.

Body type: Earthen **Origin:** Local?

Parallels & external dating evidence: None.

Types: The most common form is a simple bowl as illustrated in **Fig. 40**, but jars are also represented.

Internal dating evidence: Occurs from Period IV onwards at Kush but not at al-Mataf suggesting a 11th to 14th century date.

Discussion: From a technical point of view this class seems to be quite closely related to WAPO.

98. **UNCLASS-U** (Unglazed Unclassifiable Sherds)

Definition and description: This grouping includes all body sherds of unglazed earthenware that were not classified.

Internal dating evidence: A total of 23,216 UNCLASS-U sherds come from the phased sequence at Kush.

99. **UNIQU** (Unique Unglazed Sherds)

Definition and description: Unglazed sherds from Kush which did not fit into any of the defined classes and which were therefore described and drawn individually. These descriptions are not included in the present study for reasons of space but will be included in the final publication of the site.

Indian Classes

It is well established that fine and coarse Indian pottery was traded in the Arabian Sea during the pre-Islamic period (Kervran 1996. Tomber 2000. Whitehouse & Williamson 1973). The Kush and al-Mataf sequences have provided a detailed quantified picture of this trade from the 5th century onwards and have allowed us to trace its development as late as the 16th century.

The most common form amongst the coarse Indian pottery found at Kush (SBBW, IRAB) is a cooking pot with a distinctive everted rim (e.g. **Fig. 40**). This form is found in later Early Historic and medieval contexts in India such as, for example, period VI at Nevasa (Sankalia *et al.* 1960: fig. 157, type 127) and period VI at Maheshvar (Sankalia *et al.* 1958: fig. 78 T119a, fig. 79, T120). They were also found by Carswell in a small sounding in the Maldive Islands dated to the Song period (Carswell 1975/6: fig. 13, 335, 338). A large number of Kervran's Indian vessels from Suhar are also of this type (e.g. 1996: fig. 3, 2-4, fig. 7 1-7).

It is interesting to speculate on the reason why some of this pottery was traded; Indian coarse pottery tends to be very fragile because the firing temperature is quite low (Horton 1996: 300). The vessels that we are dealing with appear to be cooking pots – they are not suitable for transporting liquids or other goods, and they are certainly not fine table wares - but it is not clear why cooking pots should have been traded over such a long distance.

100. **IRPW** (Indian Red Polished)

Definition and description: This class has a very fine, well-levigated, brick-red body covered by a thin orange-red slip, which is often burnished. The fracture is smooth with no visible inclusions. Mica is visible on the surface. The most common forms is a carinated pot with an almost horizontal out-turned rim that is notched on its outer face (e.g. Williamson & Whitehouse 1973: fig. 5 d e).

Body type: Earthen **Origin:** India

Parallels & external dating evidence: IRPW is found over much of central and northern India although it was probably produced in Gujarat, perhaps in the region around Amreli, the site which has yielded the greatest number of types (Pinto Orton 1991. Rao 1966: 51-59). It was first defenined at Baroda and is normally dated to between the 1st and anywhere between the 3rd and the 5th centuries AD - although sometimes as late as the late 6th (Ghosh 1989i: 259. Rao 1966: 52-53. Sankalia *et al.* 1958: 161. Subbarao 1953: 56-64. Williamson & Whitehouse 1973: 39. Pinto Orton 1991: 46). The evidence for the first appearance of IRPW in about the 1st century AD seems to be reasonably convincing as it coincides with the presence of Roman amphorae at a number of sites such as, for example, Nevasa (Sankalia *et al.* 1960: 69, 280-281, 307. Gupta *et al.* 2001). However, there are very few cases where the dating evidence for its disappearance stands up to detailed critical scrutiny. For example Rao proposes a 'lower limit' of the beginning of the 5th century based upon the fact that a coin datable to 380 AD was found in one of the layers containing IRPW at Amreli (Rao 1966: 53), but there is clearly no reason, based on this evidence, that IRPW could not have continued in use much later. A more convincing case is Period III at Paunar, which is dated to the 6th century and later by coins of the Kalachuris and Vishnukundins, and Vakataka-style sculpture (Deo & Dhavalikar 1968: 7). No IRPW is reported from layers 4 and 5 that make up Period III, whereas 52 sherds are reported from the preceding Period IIb (Deo & Dhavalikar 1968: 47-69). Another is Prakash where IRPW occurs only in levels 28-25 (Thapar 1967: 24) below levels containing figurines and coins dated to the 4th to 8th centuries, suggesting that it was out of circulation by the 6th/7th centuries. On the other hand the recent discovery of IRPW in what appears to be an 8th century context at Sanjan near Bombay suggests that the class may have continued to circulate much later (Gupta *et al.* 2003: 29-30).

The fact that IRPW was imported to the Gulf has been noted and discussed by Whitehouse and Williamson (1973: 38-39) who point out that its distribution there is, unsurprisingly, limited to coastal sites. It has since also been found in the earliest layers at Suhar (Kervran & Hiebert 1991: 341, fig. 4 16-19. Kervran 1996: 38-43). The presence of IRPW is also mentioned at al-Dūr, although there is some doubt about this attribution (de Paepe *et al.* 2003: 214. Potts 1990ii: 277). Some of the smaller sherds that have been found in the Gulf seem to be of a coarser variety and could be imitations, a fact also noted by Williamson (Williamson 1972: 100 Type 2a). Examples have also been found at Qana' in Yemen in contexts dated to the late 2nd to 4th century (Sedov 1996: fig.6 8-10).

Internal dating evidence: At Kush the occurrence of this class through the sequence is somewhat surprising. Thirty-nine sherds were found; the earliest in Phase E-01, and another in Phase W-04, whilst 28 sherds occurred in Phases E-03 and E-04, followed by a few, probably residual sherds, in later phases. This is significant because it indicates that the class was not common at Kush in the 4th/5th/6th century levels, and was most abundant in the 7th or 8th centuries, a time when it is thought to have ceased circulating in India. The potential implications of this for the chronology of later Early Historic and Early Medieval India need to be carefully considered.

IRPW was rare on Hulaylah but constitutes the earliest secure evidence for occupation there (Kennet 1994: ware 15). One sherd was also picked up by the 1994 Survey on a small site close to Khatt.

101. **SBBW** (Black Burnished Ware)

Definition and description: This is a very soft-fired, black sooty ware, the exterior, and in some cases the interior, of which is burnished to a high lustrous polish. Burnishing lines are often visible on the surface. The fabric is quite sandy, with dense, well-sorted sand inclusions, little evidence of vegetable temper, and no mica visible on the surface. The class is very friable, and has a rough fracture. Small fragments of what appears to be charcoal are embedded in the surface of some sherds.

Body type: Earthen **Origin:** India

Parallels & external dating evidence: This class corresponds to the later Early Historic or early Medieval 'coarse grey', 'burnished-black' or 'coarse black' ware traditions common in India in the late Early Historic and early Medieval periods (e.g. Mehta 1979: 42-46. Sankalia *et al.* 1958: 153-155. Sankalia *et al.* 1960: 306, 323). It has also been found at Suhar where a 1st to 15th-century date was suggested (Kervran 1996: 38) and at other sites, e.g. Qalaᶜat al-Bahrain (Frifelt 2001: fig. 151).

Types: 78 (**Fig. 40**).

Internal dating evidence: Exactly one hundred sherds of SBBW were found at Kush, unfortunately only 35 of these come from the phased sequence. At Kush SBBW occurs from Phase E-02 onwards, being most common in Phases E-02, E-03 and E-11, suggesting that it began to circulate in the 7th/8th century and continued throughout the sequence. No examples were found by the 1994 Survey, possibly because its friability renders it easily degraded when exposed on the surface.

102. **FIRE** (Fine Indian Red)

Definition and description: Rather than a clearly defined class, this material is similar to IRPW in aspect but the quality of slip and fabric is much coarser. There is a lot of variation in the material, which probably represents a number of different classes from South Asia and possibly elsewhere. In general the material is thin walled (2.5 - 4 mm) and well fired with a fine smooth fracture. It has no visible inclusions and in most cases a deep red slip on the exterior. The body is a reddish yellow (7.5YR 7/6). In many sherds mica is abundant.

Body type: Earthen **Origin:** India

Parallels & external dating evidence: This may be part of the 'burnished red ware' tradition, which is common in South Asia in Early Historic and Medieval contexts (e.g. Mehta 1979: 45-6).

Internal dating evidence: Twenty-three sherds occurred at Kush throughout the sequence and with no clear chronological pattern.

Discussion: It is clear from a recent re-examination of the IRPW in the Williamson Collection (Priestman & Kennet 2002) that a number of related red-slipped wares of probable South Asian origin occur in the Gulf. These may represent low-quality products from South Asia, or local imitations from the Gulf.

103. **IRAB** (Indian Red & Black)

Definition and description: This class describes carinated cooking pots with an everted rim, often with a notch on the outside. The vessels vary between red (2.5YR 5/6) and a reddish yellow (7.5YR 7/6) on the interior and over the rim, and dark grey (10YR 3/1) on the exterior. The fabric has a rough fracture, is soft fired, and is very weak and friable. The outer surface is normally slipped and heavily burnished. It contains abundant badly-sorted, sub-rounded, quartz grains. Mica is normally visible on the surface. Many sherds have traces of burning on the exterior.

Body type: Earthen **Origin:** India

Parallels & external dating evidence: This class is related to the tradition of tan ware in South Asia that is found in contexts datable to the Early Historic and early Medieval period (e.g. Sankalia *et al.* 1958: 143, 152, 164. Sankalia *et al.* 1960: 276)

Types: 2 is the most common (**Fig. 40**).

Internal dating evidence: Thirty-nine sherds occurred in the phased sequence at Kush; 17 come from Phase W-01 where the class was most common (5th-6th century). Later Phases contained a few, possibly residual, sherds.

104. **PAINT** (Painted Indian Earthenware)

Definition and description: This class consists of wheel-made jars with fine walls (5-8 mm). The fabric is hard and brittle but breaks easily giving an angular fracture. It contains occasional rounded quartz grains and mica is visible on the surface. The clay is a reddish yellow (5YR 7/8), but the exterior has a darker red paint or wash covering the surface, which is decorated with bands of thin black or dark brown paint. The interior is unpainted.

Body type: Earthen **Origin:** India

Parallels & external dating evidence: Kervran describes a 'Fine Painted Ware' from Suhar that she dates to between the 8th and the 12th century (1996: 38). Painted wares are known from Indian sites of the later Early Historic and medieval periods, but they cannot be more precisely dated (Mehta 1979: 48). Similar sherds have also been found at early Medieval sites in Sind, such as Sehwan Sharif (Kervran 1999: fig. 11).

Internal dating evidence: Fifteen sherds occurred at Kush, most of them in Phase E-11, but four occurred in Phase E-03 (7th/8th century).

105. **RSLIP** (Coarse Red-Slipped)

Definition and description: This class has a fine buff fabric with small inclusions, small air holes and a smooth fracture. It is a small and thin-bodied class (5 mm) covered with a red slip, which tends to come off in places. Mica is evident on the surface.

Body type: Earthen **Origin:** India?

Parallels & external dating evidence: No external dating evidence.

Internal dating evidence: Thirteen sherds were found at al-Mataf from Phase III (late 15th/16th century) of the Mosque onwards.

Discussion: This may be an import from the Indian subcontinent.

106. **INDIA** (Unclassified Indian Ware)

Definition and description: The Indian pottery found at Kush has a number of features which make it quite distinct from other classes: it is low fired and quite easily breakable; it almost always contains mica which is visible on the surface; the forms tend to be carinated closed forms with a complex out-turned rim. Eight sherds were thought to be Indian or South Asian in origin according to these criteria, but could not be more closely identified.

Body type: Earthen **Origin:** India

Internal dating evidence: Eight such sherds occurred through the Kush sequence, but there appears to be no coherent chronological pattern.

Chapter 4: Analysis: changing patterns of ceramic production and distribution

In this chapter the Kush and al-Mataf sequences will be combined into a continuous 16-phase quantified sequence covering the period from the 4th/5th to the 16th/17th century and the sequence will then be analysed to investigate some aspects of Ras al-Khaimah's participation in the trade economy of the Gulf and of the Western Indian Ocean. In doing this we will make specific comparisons with the 8th to 15th-century sequence excavated at Shanga (Horton 1996) and, to a lesser extent, Pate (Wilson & Omar 1997) both on the coast of Kenya. At present Shanga provides the only comparable fully quantified ceramic sequence from anywhere in the Indian Ocean.

Combining and comparing the Kush and al-Mataf Sequences

A total of 76,663 sherds were studied and catalogued from the two phased sequences: 46,265 from al-Mataf and 30,398 from Kush.

Period VII of the Kush sequence is dated to the late 13th, or possibly to the early 14th century, and Phase Pre at al-Mataf is dated to the early or mid-14th century. If we take into consideration the potential imprecision of this dating, which is based largely on the style of the Longquan celadons (LQC), it seems likely that al-Mataf was founded at around the same time as, or slightly later than, the abandonment of Kush. Two scenarios could explain this: either 1/ Kush declined and was eventually abandoned as the inhabitants moved away to found a new settlement at al-Mataf or 2/ during the last years of occupation at Kush a small village already existed on the sand bar at al-Mataf which increased in prosperity and grew whilst the settlement at Kush declined and was eventually abandoned. After the end of Period VII Kush remained uninhabited until the 16th/17th century at which time it was re-occupied by an isolated rural building (Period VIII). The final Phase at al-Mataf, Phase Rec, has also been dated to the 16th/17th century. This allows us to establish a 16-Phase sequence covering the period between the 4th/5th and the 16th/17th century at both sites. This is set out in Table 28, together with the dating outlined in Chapter 2.

Table 28 and **Fig. 41** show the number of sherds from each of the Phases across the combined sequences. Most assemblages contain considerably more than 2,000 sherds but the assemblages from M-Pre and M-I are too small to be representative and will be omitted from most of the analysis below, which means that there is very little evidence for the 14th century.

SITE	PHASE/PERIOD	DATE	SHERDS
Kush	K-VIII	16th/17th century	7066
al-Mataf	M-Rec	16th/17th century	9600
	M-VI	late 16th century	12821
	M-V	16th century	7368
	M-IV	16th century	7749
	M-III	late 15th/16th century	6582
	M-II	14th/15th century	1686
	M-I	late 14 century	438
	M-Pre	early/mid-14th century	21
Kush	K-VII	13th century	2504
	K-VI	12th century	2914
	K-V	late 11th/12th century	4211
	K-IV	9th/11th century	2789
	K-III	8th/9th century	3932
	K-II	7th/8th century	3787
	K-I	5th/6th century	3195

Table 28: Kush Periods and al-Mataf Phases showing proposed dates and number of sherds .

Before making quantitative comparisons across the combined sequences it is necessary to ascertain that they are statistically comparable. As pottery retrieval was similar at both sites - at Kush all contexts were sieved through a 3 mm mesh, as were the majority of contexts at al-Mataf[8] - and the same recording strategy was used on both assemblages, these factors are not an issue. But, as Orton *et al.* (1993: 169) have pointed out, when sherd counts are used as the basis of quantification differing levels of brokenness can affect the ratio of pottery types or classes, and cause a statistical bias towards types or classes according to their susceptibility to breakage. To provide a control on this the level of brokenness was calculated across the combined sequence. Brokenness is defined as the average number of sherds into which pots have broken, it is calculated by dividing the total number of sherds by the EVE/100 (Orton *et al.* 1993: 168-71, 178).

K-I	K-II	K-III	K-IV	K-V	K-VI	K-VII
224.68	463.53	493.66	269.6	257.08	207.77	216.61
M-II	**M-III**	**M-IV**	**M-V**	**M-VI**	**M-REC**	**K-VIII**
225.23	169.49	150.57	82.26	141.98	190.63	185.9

Table 29: Brokenness across the Kush/al-Mataf sequence. The al-Mataf totals are based on a sample of 1,646 sherds from 11 contexts across the sequence; the Kush totals are based on all sherds (brokenness = number of sherds/(EVE/100)).

Table 29 and **Fig. 42** show that most Phases have a level of brokenness between about 170 and 270, with an average of about 205. There are two exceptions to this,

[8] Most contexts excavated at al-Mataf were sieved but some were not, unfortunately no record was kept of which these were.

Periods K-II and K-III both show a level of brokenness very much higher than the average, and Phases M-IV to M-VI show a lower level of brokenness than the average. As both of these anomalies involve more than one Phase it is unlikely that they are statistical accidents. A possible explanation for the K-II and K-III increase in brokenness might be that larger and more breakable forms such as jars were common in these Phases, but analysis suggests that this is not the case. Alternatively they may both be the result of specific depositional processes: Period K-II represents the construction and use of the mud-brick tower, whilst Period K-III represents the abandonment of the tower and its collapse. Certainly abandonment layers in which pottery was exposed on the surface for long periods might be expected to show higher levels of brokenness, as might construction layers, but it is difficult to understand why the occupation layers associated with the tower should show higher levels of brokenness. Phases M-IV to M-VI represent the last two Phases of mosque construction and final abandonment. It may be that there are more *in-situ* occupation layers in these Phases than in earlier Phases at al-Mataf.

There is clearly considerable variation in levels of brokenness across the sequence. Comparisons between Phases will need to take this into consideration, especially the fact that classes including vessels that are more susceptible to breakage (i.e. vessels such as large jars) may be somewhat over-represented in Periods K-II and K-III and under-represented in Phases M-IV to M-VI.

There is also an interesting and unexpected trend of gradually declining levels of brokenness across the sequence. If we remove the five anomalous Phases mentioned above, the average drops from just below 250 at the beginning of the sequence to just above 180 by the end. The lower levels at al-Mataf are the reverse of what might have been expected given that the layers are mostly re-deposited building fills. The consistency of this trend suggests that it is the result of a single long-term development rather than various sporadic depositional and post-depositional processes. It may be that the average strength, quality of firing, and wall thickness in the assemblage increased through time. It is possible that this is part of a wider trend in pottery technology and manufacture that needs to be investigated by studies at other sites.

Comparison with Shanga and Pate

Part of the rationale behind the quantitative study of ceramics is to allow comparisons to be made between sites. Below some insights are offered into the way that pottery was traded based on comparisons with the assemblages from Shanga and Pate in Kenya, the only two sites in the Indian Ocean known to the present author from which quantified contemporary assemblages have been published.[9]

The Shanga sequence is well published with clear and detailed descriptions of pottery wares (Horton 1996). For comparison trench 6-10 was selected as being representative the sequence. It is the larger of the two assemblages from the site and is not significantly different from Trench 1. The 21-phase sequence of 135,856 sherds covers the period from the 8th to the 15th century, making correlation with the Kush/al-Mataf sequence easy. In order to allow comparisons with Kush and al-Mataf the total assemblage sizes were calculated by combining the figures from Horton 1996 tables 9 and 14.[10]

The sequence from Pate in the Lamu Archipelago is less fully published than Shanga (Wilson & Omar 1997). It covers the period from the late 8th to the 19th century and is based on about 31,000 sherds from two test pits. It is unfortunate that there is some confusion over the precise number of 'earthenware' (i.e. local unglazed) sherds in periods IV and V from test pit 2. This makes it necessary to group pottery from the two later periods into one covering the 13th to 19th century in order to make the percentages comparable with Kush and al-Mataf. This inevitably undermines the precision and value of comparisons with Pate.[11]

Indian Pottery

The presence of Indian pottery in the Kush sequence is no surprise: ceramic trade between Arabia and South Asia has existed since Harappan times (e.g. Chakrabarti 1990: 99-102. Mery 2000: chapter 7). Indian ceramics have also been found in Roman contexts at Berenike and Quseir al-Qadim on the Red Sea coast of Egypt (Tomber 2000) and at al-Dūr in the U.A.E. (de Paepe *et al.* 2003: 214), and at other sites in the Gulf and beyond that are mentioned below. Rarely, though, have these imports come from securely dated contexts and they have never been quantified, making it impossible to gain a clear picture of the development of trade with South Asia.

A surprisingly large amount of pottery from South Asia was found in both the Period I and Period II assemblages (IRPW, IRAB, FIRE, PAINT, INDIA, SBBW). Together they make up 0.97% of the Period I (Sasanian) and 1.21% of the Period II (Early Islamic) assemblage by sherd count, (0.91% and 3.55% respectively by EVE). Period II

[9] The present author has not been able to see the PhD thesis of Wilding (1980) which is based on a quantitative study of Islamic pottery from the Lamu Archipelago in East Africa.

[10] The percentages of imported pottery published by Horton are based on the imported assemblage only, excluding the local unglazed pottery (e.g. Horton 1996: fig. 197 etc). The total for 'East African pottery' in Horton 1996: table 9 is understood to include the 'Tana tradition pottery' (*ibid.*: table 12).

[11] Wilson and Omar fail to indicate the precise number of 'earthenware' sherds from the two periods represented in the upper levels of Test Pit 2 (Wilson & Omar 1997: 38). This makes it impossible to calculate individual period percentages for these two periods. It is hoped that this will be clearer in the final publication of the site.

was the high point, in Period III the figure dropped to 0.53% and then to about 0.2% for the remainder of the Kush sequence. **Fig. 43** shows the long-term picture, including the thirteen sherds of RSLIP from al-Mataf, where Hansman also found two sherds of Indian pottery (1985: 48, fig. 11 a b).

For comparison **Fig. 44** shows the proportion of Indian pottery in the Shanga sequence; the first Indian sherds occurred between phases 9 and 12 (mid-10th to mid-11th century) in very small quantities. In phase 13 (mid-12th century) the proportion almost tripled and remained at roughly the same level until phase 18 (mid-14th century) when it declined slightly. The less precise Pate sequence seems broadly similar to Shanga, there being almost no Indian imports until periods IV and V (13th to 19th century) during which time they made up about 0.14% of the total assemblage (Wilson & Omar 1997: table 2, 3, 4 & *passim*). In Somalia the situation seems to be different; excavations at Ras Hafun have apparently yielded Indian pottery in levels dated to between the 3rd and the 5th century (Smith & Wright 1988: fig. 6 a, 5 l) and Chittick has noted that Indian wares were most common in the 9th to 11th century at Manda (Chittick 1984: 101).

Fig. 45 shows a century-by-century comparison of the Kush and Shanga sequences.[12] It appears to show two, or possibly three, distinct stages: in the 4th/5th to 9th century relatively large amounts of Indian pottery were traded to Kush (up to 1.2 % of the assemblage in the 7th/8th century), but none at all to Shanga. In the 10th to 13th centuries much smaller amounts (maximum 0.34%) seem to have been traded to both sites, and during the 14th and 15th centuries Indian pottery seems to have ceased being traded to al-Mataf but it continued to reach Shanga. In relation to this last point the possibility should be noted that some Indian wares were not identified at al-Mataf as the present author was not fully familiar with South Asian coarse wares at the time that study was undertaken.

Before considering how to interpret these patterns we should examine Kervran's sequence from Suhar in Oman (Kervran 1996). This sequence covers the period from the 3rd century to 1900 AD - if we accept Mouton's dating of the first four phases (Mouton 1992: 181). Unfortunately the pottery is not quantified in the publication, but all of the diagnostic Indian material is illustrated, giving some idea of the changing quantity through the sequence (Table 30). From this it seems that Indian pottery was present all through the sequence but it appears to have been more common in the later phases.

Indian pottery has also been found at Siraf (e.g. Tampoe 1989: 15-16, figs. 10, 11); from a range of contexts from Bahrain, possibly dated to between the Hellenistic period and the 13th-century AD (Frifelt 2001: fig. 33, 147b, 151. Højland & Andersen 1994: 251, fig. 1388. Kervran 1996: fig. 9); from an 8th-century context at al-Quṣūr in Kuwait (Kennet 1991: fig. 6 1046); and at numerous sites on the East African coast such as Ras Hafun (Smith & Wright 1988: fig. 6 a, 5 l), Manda (Chittick 1984: 101), and Kilwa (Chittick 1974: 306).

Level	Date (incorporating Mouton 1992: 181)	No. of Indian vessels illustrated
VIII	17th - 18th	14
VII	mid 13th - 16th	13
VI	8th - mid 13th	27
V	7th/8th	11
IV	5th - 7th	8 or 9
III	4th/5th	12 or 13
II	late 3rd	7
I	early 3rd AD	6

Table 30: Number of Indian vessels illustrated from Kervran's Suhar sequence (Kervran 1996: figs 3-8).

The types of vessels traded seems to have changed between the early and later periods; the examples from Kush consist almost entirely of carinated cooking pots, which also predominate at Suhar. However, from level VI onwards at Suhar small-mouthed jars began to appear in the assemblage (e.g. Kervran 1996: figs. 6 14-16, 24; fig. 7 9, 10; fig. 8a 6; fig. 8b 1-3). Similar shaped vessels also occur at Shanga (Horton 1996: fig. 224 b c d g i k l m; fig. 225 a b).

Based on this rather limited evidence we might tentatively suggest that Indian pottery shows two or three phases of distribution in the Western Indian Ocean through the period of study. During the Sasanian and Early Islamic periods it was traded predominantly in the Gulf area and possibly also the Red Sea. After the 9th/10th century Gulf trade decreased and circulation in the Arabian Sea, notably along the East African coast began to grow. In the 14th century and later it is possible that South Asian pottery ceased being traded in the Gulf at all. Suhar might have been incorporated into both the Gulf and Arabian Sea distributions. During the Sasanian and Early Islamic periods the trade was mostly in cooking pots, but during the later periods container vessels began to be traded, indicating that the commodities involved in the trade are also likely to have changed.

This archaeological evidence for trade between the Sasanian world and South Asia is a useful addition to our knowledge of contact between these two spheres at this time, which, up to now, has been very limited (e.g. Kröger 1981: 446-7). How the volume of Sasanian maritime trade at this time compared to earlier and later periods is not clear. The evidence from Kush, which is the first quantified sequence to be analysed, would seem to suggest that it was relatively high.

A notable aspect of the Indian pottery from all of these sites is that the vessels are not high-quality wares which might be traded for their own value, they are mostly carinated cooking pots with an everted rim whose size, shape, large mouths, and low strength do not make them at all suitable as transport containers. They may therefore have been traded for use as cooking pots, although this is

[12] The Shanga sequence covers only the 8th to 15th century. There is no precise indication of the amount of Indian pottery circulating in East African assemblages outside that period.

strange because locally-made cooking wares were available in the areas to which they were imported.

Islamic and non-Islamic sources speak of the head of the Gulf in the pre- and Early Islamic period as the *Arḍ al-Hind* or *Farj al-Hind* (the land or marches of India/ the Indians) (J.C. Wilkinson 1973: 41). This is normally taken to mean that the area had close relations with India. But, as Crone has pointed out (1987: 47 n.154), the non-Islamic sources speak of the area in a way that suggests a substantial population of Indians were present in the pre-Islamic period. She also suggests that there was a considerable force of Indian ships or pirates operating in the Gulf at this time (Crone 1987: 47 n.155). The precise meaning of the term *Arḍ al-Hind* remains enigmatic, but communities of South Asians in the Gulf who used, perhaps for cultural reasons, cooking pots manufactured in South Asia may explain the high proportion of Indian-made cooking pots in Gulf assemblages of this time.

Glazed Pottery

The changing proportion of glazed pottery through the two sequences shows some interesting patterns (**Fig. 46**). The proportion of glazed pottery was highest in the Sasanian assemblage where it was almost twice the proportion of the next highest - the 13th to 15th century assemblages. As has been pointed out in the discussion of TURQ in Chapter 3, glazed wares appear to have occupied a similarly high proportion of the assemblage from the 2nd century BC or so at al-Dūr. A possible objection to this conclusion might be that the glazed pottery of some Periods includes many storage jars which have a tendency to break into a large number of sherds thereby skewing the data. In order to provide a check on this **Fig. 47** was compiled showing glazed classes as a proportion of the total assemblage by EVE (there is very little data on this for the al-Mataf sequence, which is therefore omitted from the graph). There are some differences between EVEs and sherd counts, most importantly in the absolute percentages, but otherwise the general pattern is confirmed.

The glazed pottery of the Sasanian period (TURQ) was almost certainly manufactured in southern Iraq (Mason & Keall 1991: 52) and transported by sea, but it is not clear how much of it was in use on other sites in Iraq, the Gulf or Iran at this time as there are no comparable quantified assemblages. It may have varied according to locality and proximity to the coast, for example Schmidt states that it was almost unknown before 750 at Iṣṭakhr (Schmidt 1939: 101). The proportion of glazed pottery dropped to its lowest point at the beginning of the Islamic period, immediately after the construction of the Period II tower. Following this there was a sustained gradual increase until the peak of al-Mataf's commercial activity in the 15th to 16th century (Kennet 2003: 118-120). After this time the proportion declined slowly until the end of the sequence.

The nature of glazes and their cost and value changed throughout this time as first lead and later tin glazes were introduced, making the validity of long-term comparisons such as this unclear as an indicator of the level of luxury in material culture. Nonetheless, as glazed pottery does not appear to have been manufactured locally, its fluctuating proportion may be used as a crude proxy for the volume of overseas trade conducted at the two sites and may therefore have considerable significance. However, the proportion of glazed wares would have varied in relation to the specific volume of overseas trade that took place at Kush and al-Mataf, but it may also have varied according to the broader regional pattern of trade, production and distribution in the Western Indian Ocean as a whole. It is therefore necessary to attempt to disentangle these two patterns in order to interpret correctly the changing levels of overseas trade at the two sites. Ideally, were the volume of glazed ceramic trade in the Western Indian Ocean throughout this time known, it would be possible simply to compare the Kush/al-Mataf sequences and identify points where they diverge from the normal. As this data is not available a similar analysis was carried out on the Trench 6-10 sequence at Shanga and the sequence at Pate. Glazed pottery was also an imported commodity at both sites. To make comparison easier the data from each site has been averaged by century, the results are shown in **Fig. 48** and Table 31.[13]

Although the absolute percentage in almost all periods was quite different, there are some marked similarities in the long-term pattern of fluctuation throughout the 9th to 15th centuries - the period for which data is available for Shanga. To be specific: there is an increase in the proportion of glazed pottery at both sites from the 8th to the 13th century, a slight decline in the 13th/14th, and further increase in the 15th century. The broad similarity between the two patterns is more than mere coincidence and must indicate that there was indeed a general pattern of development of trade in the Western Indian Ocean into which the two sites were linked. Indeed, the degree of similarity might be a crude reflection of how closely the two sites were integrated into this pattern. The similarities in the long-term pattern of fluctuation, what we might call the 'occurrence profile', are not, however, reflected in the absolute proportions, which vary quite considerably between sites. This is because the absolute proportion of glazed ware at each site would also have been determined by specific local factors, such as, for example, cooking and eating habits, and the availability and price of local pottery or other containers relative to that of glazed pottery.

[13] At Shanga 8th c. = Phase 1, 2; 9th = 3-5; 10th = 6-9; 11th = 10-12; 12th = 13,14; 13th = 15,16; 14th = 17-21; 15th = 21. At Kush/al-Mataf 5th = K-I, 6th = K-I, 7th = K-II, 8th = K-II; 9th =K-III; 10th = K-IV; 11th = K-V; 12th = K-VI; 13th = K-VII; 14th = M-Pre, I; 15th =M-II, 16th = M-III to M-VI.

	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
Kush/al-Mataf	14.71	14.71	5.84	5.84	3.61	4.20	5.44	4.98	8.11	6.32	8.36	6.27
Shanga	-	-	-	2.56	2.15	2.33	4.83	5.80	5.39	4.83	5.48	-
Pate	-	-	-	2.17		0.71	1.53	1.48	2.49			-

Table 31: Proportions of glazed pottery through the Kush/al-Mataf, Shanga, and Pate sequences averaged by century (% of total assemblage by sherd count).

K-V	K-VI	K-VII	M-I	M-II	M-III	M-IV	M-V	M-VI	M-REC	K-VIII
0.31	0.51	1.28	1.14	1.96	1.41	1.12	0.91	1.39	2.39	0.52

Table 32: Chinese ceramic through the Kush/al-Mataf sequence (% of total assemblage by sherd count).

There are also periods when the occurrence profiles of the two main sites vary. For example the rapid increase between the 10th and 11th century at Shanga is not reflected at Kush and the increase between the 12th and 13th century at Kush is not reflected at Shanga. These might be patterns which were caused by the individual development of the sites and their hinterlands, rather than the broader pattern of trade.

At Pate the proportion of glazed pottery was much lower than either Kush or Shanga and does not seem to have fluctuated in synchronisation, except perhaps during the 13th to 15th centuries. This might suggest that Pate was outside, or less integrated into, the Western Indian Ocean system of production and distribution that we have proposed.

Clearly these rather speculative interpretations need to be further explored. At present they are inadequate as they are based on data from only two or three sites. In the future data from other sites will allow the creation of a more robust outline of the development of trade against which it will be possible, by comparison, to isolate events that are specific to individual sites or regions, and events that are Indian-Ocean wide. In the meantime this approach does provide a methodology with which to explore archaeologically the long-term development of the Western Indian Ocean mercantile economy.

Far Eastern Ceramics

Together, Kush and al-Mataf have yielded a quantified sequence of Chinese ceramics that covers a period of over 500 years from the late 10th/early 11th to the late 16th century. In the 11th and 12th century, in addition to a few sherds of Yue celadons, ceramics probably manufactured in Guangdong were the most common in the Chinese assemblage. These are represented predominantly by South Chinese White Stoneware of the Song period (GWW), but also Yue-type wares (GGW). Carved White-Stoneware Lotus Bowls (CWW), which may also have been produced in Guangdong, were present. In the 13th century Dehua Moulded (DHM) and probably also Dehua Plain Whiteware (DHP) occur together with increasing quantities of Longquan Celadon (LQC), which had become the most common Chinese class by the 14th century. During the 16th century Blue-and-White Porcelain (CBW) became the most common Chinese import.

The proportion of Chinese ceramic in the sequence is shown in Table 32 and **Fig. 49** (none was found in the stratified sequence earlier than Kush Period V). The proportions range between 0.31% and 2.39% and are within the range that might be expected for sites in the Western Indian Ocean ambit such as Siraf, Qala^{c}at al-Bahrain, Fustat (Rougeulle 1996: 176. Scanlon 1971) and Shanga (below), although sites in the eastern Indian Ocean may have had proportions up to 100 times greater (e.g. Stargardt 2001: table 1).[14] The pattern is one of fluctuating amounts of Chinese ceramic. The fluctuations are not sporadic or unconnected Phase-by-Phase shifts, but instead form a pattern of longer-term periods of growth and decline which suggests that they are result of consistent trends in the use of Chinese ceramic at the site.

With this notion in mind, the sequence can be divided into six stages based on the amount of Chinese material present:

Stage 1 Before Kush Period V (8th -11th century).
During this stage there is no Chinese ceramic from the stratified sequence at Kush, but there have been isolated finds of Dusun and Changsha wares (CHANG) at Hulaylah and Khatt in Ras al-Khaimah which suggest that there were, during this time, occasional imports that are too rare to have shown up in the Kush assemblages.

Stage 2 Kush Periods V and VI (11th to 13th century).
During this stage Chinese ceramic made up 0.3% to 0.5% of the total assemblage. This proportion appears to have been rising slowly.

Stage 3 Kush Period VII and al-Mataf Phase II (13th to 15th century).
During this time there was a very dramatic increase in the proportion of Chinese wares, initially to about 1.28% and

[14] The data presented by Tampoe 1989: 386-401 is not used here as she does not give actual figures and does not specify how the counts were obtained.

Development in trade	Date	Guy 1990 ref:
Small volumes of trade.	pre 7th	1-2
Increase in trade with introduction of Near Eastern aromatics and spices from SE Asia.	in Tang period	6
Chinese begin using ceramics as a trade item.	by 9th	9
Reunification under Northern Song: new era of vigorous maritime trade. Growth in economy of S. China encourages trade.	960 AD onwards	12, 13
Office of superintendent of maritime trade established.	971 AD	13
Song government encourages trade.	987 AD	13
Collapse of Northern Song capital and strain on economy encourages involvement in trade, especially ceramics.	1126 AD onwards	16
Trade deficit – export of copper coins prohibited which may have encouraged export of ceramics.	1160 –1265 AD	14
Export of ceramics encouraged to balance trade.	1216 AD	14
Yuan desire for profit was a great stimulus to trade, unprecedented quantities of Chinese ceramics in SE Asia and Islamic world	after 1279 AD	23
Possible decline in trade due to imperial prohibitions – 'Ming gap'.	1368 AD – early 15th	31
Commercial expansion.	15th – 17th	36

Table 33: The long-term development of Chinese trade and ceramic trade with Southeast Asian and the Indian Ocean (from Guy 1990).

then another large jump to 1.96% by the 15th century. As has been stated above, the figure of 1.14% from al-Mataf Phase I is based on an assemblage of only 438 sherds, the smallest in the sequence, meaning that one additional Chinese sherd would have raised the proportion to 1.37%. This figure should not therefore be allowed to confuse the overall picture.

Stage 4 al-Mataf Phases III to V (16th century).
During the 16th century the proportion of Chinese ceramic declined slowly but steadily until it was only half what it had been at the 15th-century peak.

Stage 5 al-Mataf Phases VI and REC (later 16th to 16th/17th century).
During this stage the proportion of Chinese ceramic once again rose dramatically, this time to reach 2.39%, the highest proportion in the sequence.

Stage 6 Kush Period VIII (16th /17th century).
Here we see a very dramatic decrease in the proportion of Chinese ceramic to levels resembling those of the 11th century. However, it should be remembered that Kush Period VIII was a rural farmhouse rather than a coastal trading site and is not therefore strictly comparable to the earlier assemblages.

Interpreting these stages presents us, once again, with the problem of deciding whether the fluctuations are caused by changing local circumstances at the sites of Kush and al-Mataf, or by broader trends in Chinese ceramic trade in the Indian Ocean as a whole. For example the increase in the proportion of Chinese ceramic in the 13th to 15th century at Kush/al-Mataf, or the decline during the 16th century, might be due either to local economic growth and decline, or to the fact that the quantity of Chinese ceramic in circulation in the Indian Ocean fluctuated during these periods. In order to resolve this question we need to map out the general pattern of Indian Ocean ceramic trade, both by studying the development of the production centres in China and by examining comparable sequences from other sites in the Indian Ocean.

At the present time the detailed quantified information is not available to allow us to build up a broader picture. Nonetheless it is worth exploring briefly some of the information that is available. Let us begin with a brief examination of Chinese ceramic production and export. John Guy has produced a short but excellent study of the Southeast Asian ceramic trade from the 9th to the 16th century (Guy 1990: 1-44). In this study Guy sets out a picture of the long term development of Chinese ceramic trade. His results are summarised in Table 33.

Guy's study outlines a picture of more-or-less continual growth and expansion in the production and export of Chinese ceramic from the Tang period until the 17th century, with a possible brief interlude in the early Ming period. Because this is based largely on historical information that is essentially anecdotal in nature, it is difficult to know whether this was a pattern of steady long-term growth, or one of sudden increases followed by periods of stability. There are some indications that it may have been the latter as there appear to have been particular historical events that caused notable increases in ceramic production and export. For example the Song 'economic miracle' was a time of sustained economic growth and deliberate encouragement of overseas trade which may have increased the amount of ceramic traded, and the early Yuan period was also a time where deliberate government policies may have caused a notable increase.

Guy's general picture is supported by more localised studies, especially those based on detailed quantified historical evidence from the southern provinces of China where much of the ceramic was produced, for example Clark (1991) and So (2000). These two studies demonstrate the rapid economic growth that took place in the southern part of Fujian province (Minnan) from the 10th until the 13th century as the area switched from an agricultural subsistence economy to a commercial economy driven by the revenues of maritime commerce and manufacture (Clark 1991: 95). Ceramic was a key aspect of this as it was one of the principal maritime exports (Clark 1991: 68, 166-7. So 2000: chapter 8).

Ho Chuimei has undertaken a detailed field survey of kiln sites in Minnan, and has proposed a ceramic classification system with which she has dated the 170 or so kilns that have been found (Ho Chuimei 2001). She is able to count the number of kilns in use in each of the periods she has defined (Table 34).

Date (AD)	Number of kilns
1050 - 1150	47
1140 - 1280	31
1280?-1350?	24
1340? - 1380?	25
1370 - 1400	5

Table 34: Kiln sites in Minnan in use throughout the later 11th to 14th century (from Ho Chuimei 2001: table c).

Ho Chuimei's work confirms the impression of a boom in ceramic production during the Song and Yuan periods, and shows that the period immediately following (roughly equivalent to al-Mataf Phase I) had much lower levels of ceramic production (Ho Chuimei 2001: 255-6). This is in line with Clark and So's conclusions that suggest a slowing and reverse of the Minnan economy during the later 12th and 13th century (Clark 1991: 176-8. So 2000: chapter 4). The problem is that these studies are based on very localised datasets and, as far as understanding the overall production and export of Chinese ceramic in the Indian Ocean is concerned, they obviously do not present the full picture. This is because adjacent areas and kiln sites may have been expanding their output as ceramic production declined in Minnan (e.g. So 2000: 197-201).

Clearly then we are still some way from being able to construct a full picture of Chinese ceramic production through the period that concerns us. In the opinion of the present author the most useful way forward would be an expansion of the systematic survey of kiln sites undertaken by Ho Chuimei to cover all of the major ceramic production areas in southern China.

Rougeulle's (1996) study of Chinese ceramics in the Western Indian Ocean attempts to map out a long-term history of ceramic trade based on the number of sites where Chinese ceramic has been reported. Some interesting patterns emerge, especially in relation to the changing importance of the Red Sea and the East African coast but it is not possible to extract an impression of the changing volumes of ceramics traded with which to compare the Kush/al-Mataf sequence because there is no quantified data.

Another approach is obviously to examine quantified sequences from other excavated sites in the Indian Ocean. Again, Shanga, in East Africa, is the only fully comparable sequence that has been published. **Fig. 50** shows the proportion of Chinese ceramic through the Shanga sequence. It demonstrates a low but more-or-less continuous presence from the beginning of the sequence in the 8th century until phase 17 in the 14th century at which time the proportion began to rise quite markedly, reaching a plateau in phase 19 after which time there was a small but steady increase.

Fig. 51 and Table 35 compare the proportions of Chinese ceramic at Kush/al-Mataf and Shanga by century. The pattern is highly instructive. Shanga received small quantities of Chinese imports from much earlier than Kush, during the 8th century and through the Abbasid period they made up about 0.1% of the Shanga assemblage. During the same period Kush received no Chinese imports at all, or, more likely, it did but they were so rare that they have not been found. It was only in the late 10th/11th century that sherds of Chinese ceramic began to reach Kush in some quantity. In the 12th or 13th century the proportion again increased quite markedly and continued to increase more slowly until the 15th century. By contrast Shanga's Chinese imports remained at the same, relatively low, level until about the 14th century. Only at that time did the proportion begin to rise markedly, between one and two hundred years later than the marked increase at Kush.

There is no doubt that overall, during the period between the 8th and the 16th century, the volume of Chinese ceramics traded to both sites increased substantially suggesting, as expected, that this might be a generalised Indian-Ocean-wide pattern. However, comparison of the two sequences shows that there were also considerable localised differences in chronology, scope, and patterns of fluctuation within this broad trajectory, which are probably related to changing regional patterns, or the individual circumstances of the sites.

It could be argued that the Kush/al-Mataf sequence fits the Chinese pattern more closely than the Shanga sequence does. Between the 8th and the 10th century, in the time before Chinese ceramics became a bulk

	8th	9th	10th	11th	12th	13th	14th	15th	16th
Kush/al-Mataf	0	0	0	0.31	0.51	1.28	1.09	1.96	1.23
Shanga	0.10	0.15	0.10	0.11	0.13	0.11	0.57	0.90	?

Table 35: Chinese ceramic through the Kush/al-Mataf and Shanga sequences by century (% of total assemblage by sherd count) .

commodity, both sites probably imported small amounts, either as containers of luxury goods or as luxury table wares. As has been mentioned above, a few sherds of Dusun and Changsha wares (CHANG) have been found at Hulaylah and Khatt in Ras al-Khaimah. At Shanga these rare imports show up in the sequence because the assemblages there are so much larger than they are at Kush. After the 10th century the two sites began to differ, the proportion of Chinese imports at Kush rose very markedly in two significant jumps: one in the late 10th or 11th century, and the second in the 13th century. The first of these corresponds roughly to the advent of the Song period –the 'economic miracle of the early Song' (Wink 1990: 57) - that, as Guy has argued, would have involved a significant increase in the amount of ceramic traded (Guy 1990: 12-13). The second corresponds to the beginning of the Yuan period which, again according to Guy, would have seen unprecedented quantities of Chinese ceramics in being traded in the Indian Ocean (Guy 1990: 23). However, during this period there was no change in the proportion of Chinese ceramic in use at Shanga.

The proportion of Chinese ceramic at Kush/al-Mataf continued to increase throughout the 14th and 15th centuries. It is possible that the slight drop in the later 14th century (Phase I at al-Mataf) might correspond to the early Ming imperial prohibitions against trade (the 'Ming gap'), but as this drop is based on a difference of only one sherd in a small assemblage it would be wrong to place any emphasis upon it. During the 14th and 15th centuries Shanga showed a similar pattern of growth, although the actual proportion was only about half that at al-Mataf. In the 16th century, after the end of the Shanga sequence, the proportion at al-Mataf fell and then rose again dramatically. These later shifts are difficult to relate to events in China, and may reflect developments that are specific to the Gulf or to al-Mataf itself.

Some key points emerge from this analysis. On the one hand it seems that there is a very broad correspondence between the occurrence of Chinese ceramic at Kush/al-Mataf and the apparent pattern of production and export in China. This appears to support Clark's view that the entire Indian Ocean littoral as far as Arabia was, in some respects at least, the 'hinterland' of southern China (Clark 1991: 178), and was part of a closely-linked economic system. On the other hand, the fact that sites such as Shanga in East Africa follow the Chinese pattern in some periods, and diverge markedly from it in others, suggests a shifting pattern of regional involvement in this economic system along the lines outlined by Rougeulle (1996). Clearly the publication of more quantified ceramic sequences from around the Indian Ocean will provide us with a more nuanced understanding of the complexities of the mercantile economy throughout this key period.

Regional markets, distribution systems and commercial competition

The Monochrome Sgraffiato 'Revolution'

In Phase E-08 (Period V) at Kush we see the first occurrence of the distinctive monochrome sgraffiato tradition (BGRAF, DGRAF, GGRAF, MGRAF). Together these classes represent a later development of the sgraffiato technique and share a number of new attributes that began to occur in the later 11th or 12th century: 1/ they are very solidly potted in a red fabric (Fabric 1) with simple rounded rims and shapes that are easily stackable; 2/ they are slipped and glazed on the interior only, the exterior being left bare; and 3/ decoration consists only of a series of crude, rapidly-executed squiggles under a monochrome glaze. It is possible that these attributes were intended to reduce pottery production and transport costs. The increased solidity and simplicity of the vessels would have reduced breakage during transport and facilitated dense packing. Omitting to glaze and decorate the vessel exterior would have saved on expensive materials and on transport damage as only the interior of the bowls actually needed to be glazed. Reducing the sophistication and range of colour used in the decoration would also have saved both time and materials and enhanced the profitability of the product to the manufacturer or merchant.

Such attributes are new but they are not unique, similar developments have been noted in Chinese ceramic production in the Yuan period from the late 12th and early 13th century during a governmental drive to increase profits from the ceramic trade (Guy 1990: 24). A very similar range of technical developments have also been noted in central Mediterranean pottery during the 12th century (e.g. Molinari 1994: 106).

The cost-cutting measures must have been successful because the monochrome sgraffiatos very rapidly became one of the most abundant glazed classes in circulation. During the 10th century only very small quantities of sgraffiatos were in use - a few sherds occurred at Shanga and they have not been found at all at Kush where the assemblages are much smaller. But by Period VII at Kush they made up 0.31% of the total assemblage and at Shanga the numbers increased much more dramatically: Phases 10 and 11 in Trench 6-10 witnessed the sudden arrival of 19 sub-divisions of what Horton calls the 'late sgraffiatos' (Horton 1996: fig. 14). In phase 9 at Shanga they made up 0.41% of the total assemblage (including 'Green-glazed incised' but excluding 'Green monochrome'). In phase 11 this number had risen to 4.1% and it reached a peak of 6.06% in phase 14 (Horton 1996: tables 9, 12, 14). This certainly seems to represent something of a revolution in production and distribution. The proportions are shown by century in Table 36 and **Fig. 52**; Pate is not included in this analysis due to the difficulties of subdividing the later phases.

	8th	9th	10th	11th	12th	13th	14th	15th
Kush/al-Mataf	0	0	0	0.17	0.31	0.48	0	0
Shanga	0	0	0.17	2.43	3.74	4.01	1.97	0.47

Table 36: Monochrome sgraffiatos through the Kush/al-Mataf and Shanga sequences (as % of total assemblage by sherd count).

A comparison of the Kush and Shanga sequences demonstrates that the proportion of monochrome sgraffiatos at Shanga was on average about 10 times higher than at Kush and that, possibly because of the greater abundance, the range of decorative styles represented was also much greater. It is remarkable that Shanga should have received greater amounts of monochrome sgraffiatos than Kush, which is much closer to Iran where it is almost certain that they were manufactured (see below). This suggests a very specific trade link between Iran and East Africa with which Eastern Arabia was not involved, and might perhaps be an example of pottery being used as ballast, or in order to pay for a specific product such as East African timber or slaves.

As with glazed wares in general, despite the differences in actual percentages the pattern of the occurrence profiles is very close: at both sites the proportion increased steadily during the 11th and 12th centuries, peaking in the 13th century, after which time circulation stopped. At Shanga some residual material is found in later levels, but this is not the case at Kush because the sequence ends at this time and is continued at al-Mataf where no sgraffiato has ever occurred. The similarity of the two occurrence profiles suggests that this chronological pattern of later sgraffiato occurrence is a regional rather than site-specific pattern, and can be expected to be replicated at other sites.

In addition to evidence of rapidly-increasing circulation and production-cost reduction that has been outlined here, it is relevant to note the discoveries of kiln sites which suggest the existence of numerous local sgraffiato production centres across 12th-century Iran (Morgan 1991: note 29. Morgan 1994a: 122. Stein 1937: pl. IV). This contrasts with the evidence that is available for the preceding periods which suggests that there were very few glazed ware production centres in the 9th century but that these began to increase in the 10th and 11th century (Mason & Keall 1991: 63-4). The picture therefore seems to be one of an increasingly competitive and commercialised market for glazed pottery in the Western Indian Ocean during the 11th, 12th and 13th centuries.

Sgraffiatos, Longquan Celadon, and Blue and White Porcelain

At the beginning of the 13th century sgraffiatos were amongst the highest quality glazed wares in general circulation. At that time they made up around 20% of the glazed assemblage (0.45% of the total assemblage) at Kush and, as has been pointed out above, sgraffiato production was carried out at a number of centres across mainland Iran. However, by the time that al-Mataf was founded in the early to mid 14th century sgraffiatos had completely ceased to circulate, a pattern that extends throughout Iran, Iraq and Central Asia. Both Whitehouse and Morgan have suggested that their demise may have been caused either by the disruption of the Mongol invasions of Iran in the second quarter of the 13th century or by their being driven out of production by imported Chinese celadons (Morgan 1991: 78. Morgan 1994a: 122. Whitehouse 1968: 15).

Indeed Longquan Celadons first began to occur at the very end of the Kush sequence - just before sgraffiato ceased to circulate - initially in small quantities but by Phase II at al-Mataf they made up about 17% of the glazed assemblage and seem to have taken the place previously occupied by sgraffiatos as the highest quality and most widely available glazed class. However, Longquan celadons did not hold their pre-eminent place for long, as already by Phase III at al-Mataf Chinese Blue and White Porcelain had begun to appear in the assemblage. By the following Phase it was challenging Longquan Celadon for supremacy and by the end of the al-Mataf sequence it dominated, occupying a 20% niche in the glazed ware assemblage.

The figures from Kush and al-Mataf are set out in Table 37 and **Fig. 53**. It is well known that CBW eventually began to dominate the Chinese export market. Guy believes that this occurred after the disruptions to the export trade caused by the defeat of the Mongols in China in 1368 AD (1990.: 25) but our data would suggest that, in Ras al-Khaimah at least, CBW did not achieve pre-eminence until later in the 16th century. The Shanga Trench 6-10 sequence, which ended in the early 15th century and did not contain a single sherd of CBW, corroborates this to some degree, as does the evidence from the fill of the House of the Mosque at Kilwa (Horton 1996: 310, table 14. Chittick 1974: 18, 312).

	K-IV	K-V	K-VI	K-VII	M-II	M-III	M-IV	M-V	M-VI	M-Rec
SGRAF	2.56	9.61	18.62	20.69						
LQC				1.97	17.02	9.39	5.64	6.48	4.89	12.08
CBW						2.76	4.14	5.63	9.65	19.60

Table 37: Proportions of sgraffiatos (BGRAF, CHAMP, DGRAF, EGRAF, GGRAF, HGRAF, LGJARS, MGRAF, PGRAF, YGRAF), Longquan Celadon (LQC) and Chinese Blue and White Porcelain (CBW) through the Kush/al-Mataf sequence (percent of glazed assemblage by sherd count).

K-IV	K-V	K-VI	K-VII	M-II	M-III	M-IV	M-V	M-VI	M-REC	K-VIII
0.04	0.05	0.17	0.60	0.30	0.58	0.35	0.50	0.37	0.28	0.33

Table 38: Proportion of frit through the Kush/al-Mataf sequence (% of total assemblage by sherd count).

	K-I	K-II	K-III	K-IV	K-V	K-VI	K-VII	K-VIII
As % of pottery sherd count.	13.08	4.73	4.73	28.76	16.43	29.86	8.99	12.10
No. of fragments	418	179	186	802	692	870	225	855

Table 39: Glass through the Kush sequence by number of fragments and as a percentage of the total pottery assemblage by sherd count.

The Kush/al-Mataf sequence suggests that the transition from LQC to CBW took place gradually over a number of Phases, whilst the transition from sgraffiatos to LQC was much more sudden. This could, in part, be an illusion caused by the chronology of the Phases, especially by the fact that the 14th century is only weakly represented in the sequence - and also that a significant amount of residual LQC must still have been present in Phases IV and later at al-Mataf, whilst the same is not true of sgraffiatos due to the abandonment of Kush and the new foundation at al-Mataf. Nonetheless, the abrupt end of sgraffiato circulation while it was at its peak may suggest that disruption to production and distribution may have been the cause of its decline, rather than commercial competition with celadons.

Frit or stone-paste wares

The proportion of frit through the two sequences is shown in Table 38 and **Fig. 54**. Only one sherd of frit occurred in Period IV at Kush, and only two in Period V, both of which were from Phase E-08, suggesting that the isolated single sherd from Period IV might be intrusive. From the later part of Period V onwards there was a continual presence of frit in the sequence.

The first occurrence of very small quantities in 12th-century contexts was followed by a very marked increase in the 13th century, beginning a period which lasted until the early 16th century during which frit constituted between 0.5% and 0.6% of the total assemblage. This was followed by a slow decline during the 16th century. However, as **Fig. 54** shows, the proportion varied in quite a haphazard way during the al-Mataf sequence, especially in Phases II and IV, which may be chance fluctuations caused by the relatively small quantities with which we are dealing.

As has been discussed in Chapter 3, there were significant changes in the nature and form of frit vessels in the 14th century, but these do not appear to have been accompanied by a significant change in the amount of frit in circulation.

By comparison no frit occurred at Pate and only one sherd is recorded at Shanga from the Trench 6-10 sequence (Horton 1996: 296 table 14). This is in stark contrast to the distribution of Iranian sgraffiatos, which we have described above, which were more abundant at Shanga than in Ras al-Khaimah. Given that both classes were probably manufactured in Iran (Morgan 1994a & 1994b), although at different centres, this fact serves perhaps to illustrate the complexity of the mercantile distribution systems with which we are dealing. It suggests that there may have been links between production centres and groups of merchants with very specific maritime itineraries.

Glass

Glass fragments were counted at Kush but not at al-Mataf. Table 39 and **Fig. 55** show the amount of glass through the sequence, by fragment-count and, for comparative purposes, in relation to the size of the pottery assemblage. As the study and cataloguing of the glass is not yet completed, these figures are a preliminary assessment and may change before the final publication.

Of course, unlike pottery, glass cullet was often reused and was widely traded, which may affect the fragment counts for some periods in ways that are impossible to know. Nonetheless the pattern of occurrence through the sequence is instructive. It indicates that there was a high level of glass occurrence between Periods IV and VI, but that the peaks of Periods IV and VI are separated by a somewhat lower level during Period V. It seems, therefore, that it was during the period between the late 9th and the 12th century that glass was most commonly used at Kush, with a possible decline during the later 11th to early 12th century. During the 7th to 9th century and during the 13th century there appears to have been much less glass at Kush.

Glass was not quantified at Pate. However, it was at Shanga where the largest number of fragments occurred in phases 11-13, which are datable to the 11th/12th century. In architectural terms this was a poor period in the sequence and Horton expressed surprise that an apparently high-status commodity such as glass should have peaked during a period of relative poverty (Horton 1996: 311, fig 232). However, if, instead of using the raw number of fragments as a measure of abundance, we use the proportion of glass fragments to pottery sherds, the peak appears between phases 6 and 9, which are datable to the 10th century, with a smaller secondary peak in phase 13, datable to the early 12th century (Table 40, **Fig. 56**).

0.56	0.62	0.61	1.22	3.01	4.34	5.7	4.52	1.89	1.95	1.71
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
2.69	1.15	0.67	0.4	0.49	0.29	0.45	0.34	0.26	0.12	
12	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	

Table 40: Glass through the Shanga Trench 6-10 sequence by phase (% of total pottery assemblage, figures measured from Horton 1996: fig. 232).

Relative to the amount of pottery there was always a great deal more glass at Kush than at Shanga, but despite this notable difference, there is a reasonably good correspondence in the occurrence profile of glass at both sites, especially in the 10th century peak (**Fig. 57**), but also in the 12th century peak, which does not show up in **Fig. 57**, but is evident from a comparison of **Fig. 55** and **Fig. 56**. Based on this assessment we might suggest that the peaks in the levels of glass in the Shanga sequence were linked to the general trends of glass circulation in the Indian Ocean more closely than they were to the changing wealth of Shanga. This is a good example of the need to consider absolute quantities of artefacts in relation to the amount of earth excavated or, as a proxy for this, to the amount of pottery retrieved, and of the need to consider individual occurrence profiles in relation to a broader regional picture in order to interpret correctly the patterns that emerge.

It is not clear why the proportion of glass was so much higher at Kush than at Shanga. Relatively little is known about medieval glass trade in the Indian Ocean, (e.g. Chaudhuri 1990: 332. Meyer 1992: 43-74, 97-131) and, as with pottery, the lack of quantified assemblages and sequences further hinders analysis. As with frit, the contrast between the relatively high proportion of sgraffiatos at Shanga and the relatively low proportion of glass does suggest the existence of numerous different networks of merchants with different maritime itineraries.

Glass was quantified in a similar way at Tell Abu Sarifa in south-central Iraq in levels probably dating to between the 5th and the 9th century (Adams 1970). The proportion of glass varied between 0.23% and 6.35% of the pottery assemblage. Simpson has collected proportions from other sites; although it is not always clear exactly how the glass has been quantified proportions range between 46.38% at Tell Abu Skhair and 0.66% at Seh Qubba, although different counting methods were used at both sites (Simpson 1992: 320). As more such data is published from other sites it will be possible to build up a clearer regional picture of glass use and trade.

Conclusion

Patterns of trade

The results of this analysis have begun to suggest the complexity and long-term development of the patterns of distribution in the Western Indian Ocean through the period of study. Historical evidence for the merchants and their practices is, on the whole, thin and sporadic, and where it exists it is anecdotal and tends to represent the activities of selected merchants or groups of merchants who may not be representative of the whole system (e.g. Labib Kārimī. Goitein 1967-93). Historical analysis of long-term or regional patterns of trade is further hampered by the fact that, as Chaudhuri has pointed out, the Indian Ocean encompasses four great civilisations, each with its own very distinct historical tradition with a different and not necessarily comparable record of trade and economic activity (e.g. Chaudhuri 1990: 49-70). The archaeological record is selective too, most importantly in the range of traded commodities that it can identify, but despite these limitations it does have the ability accurately to illustrate and compare long-term and regional patterns from a whole range of sites, including those which are too small to appear in historical records.

Patterns of distribution of contemporary wares (e.g. late sgraffiatos and frits) have been used here to suggest the possible existence of independent networks of merchants, some of which may have had specific links to production and distribution centres and may have followed specific itineraries. For example, it is argued that the high proportion of monochrome sgraffiatos at Shanga compared to Kush - which is closer to the production centres - is indicative of the way in which these ceramics were traded, which was not by itinerant cabotage vessels because cabotage trade would have resulted in a bias towards sites closer to the production centre. The late sgraffiatos are, therefore, more likely to have been taken on as a cargo for a specific destination by merchants who were plying a direct route in order to trade particular commodities. This conclusion is strengthened by the fact that the frits, which were manufactured in broadly the same region, have a very different distribution pattern being common at Kush but hardly occurring at Shanga. This suggests that 1/ there was more than one mercantile distribution system in operation, and 2/ that there may have been merchants or groups of merchants with links to specific production and/or distribution centres who plied a specific set of routes and not others.

Some other points have emerged in relation to possible commercial competition between manufacturing centres or regions for the ceramic market - for example sgraffiatos, Longquan Celadons, and Blue-and-White Porcelain. There is also some evidence in the increasingly simple and more robust design of pottery in the 12th century to suggest an increasing concern for costs of manufacture and costs of transport across the Indian Ocean which could be indicative of price competition between Far Eastern and Islamic glazed ceramic production.

In addition, the changing 'occurrence profiles' of Indian and Chinese ceramics at Kush/al-Mataf and Shanga have been used to suggest the existence of broad regional patterns of trade that changed through time. In the case of Chinese ceramics, comparison of the occurrence profile from Kush/al-Mataf with the historical and archaeological record from Southern China has been used to hint at the degree of economic integration across the whole breadth of the Indian Ocean.

In conclusion, the type of archaeological approach taken in this study is still in its infancy in the Indian Ocean, but it is hoped that this preliminary analysis has demonstrated the potential of quantified ceramic assemblages to provide detailed insights into the development of trade and economy, both at the level of the individual site and at the regional level. When more sequences have been excavated and published a fuller picture of the development of production and distribution in the Indian Ocean will emerge.

Methodological issues

Three main methods of analysis have been used in this chapter. The first, and most obvious, is the comparison of the proportion of classes (or groups of classes) between different sites in order to understand patterns of distribution. An example of this is the differing proportion of late sgraffiatos at Shanga and Kush in the 12th century.

The second method of analysis is referred to as an 'occurrence profile'. An occurrence profile can be defined as the pattern of occurrence of a class (or group of classes) as a proportion of individual Phase assemblages through a sequence of Phase assemblages. It expresses the changing abundance of the class through time. In itself an occurrence profile is a useful history of a particular class at a particular site, showing when it first came into use, how its frequency increased or decreased through time, and - once the problems of residuality are taken into account - it can also indicate when the class went out of use. There are many examples of this in this chapter: one would be the analysis of TURQ, which has been shown to have been extremely common in Sasanian levels and to have declined throughout the sequence to become almost extinct by the 16th century. Another would be the analysis of the long-term growth of Far Eastern ceramics in the sequence.

The third, and least conventional, method of analysis is the comparison of occurrence profiles between two or more sites. The idea behind this method is that although the absolute proportions of a particular class might vary quite markedly between sites, it is nonetheless possible to compare the positions of peaks and troughs, and periods of growth and decline in the occurrence profiles from different sites. An example of this is glass at Shanga and Kush: comparison of the Shanga and Kush occurrence profiles shows that the peaks in glass at both sites are regional rather than site-specific phenomena. Similar comparisons of the occurrence profiles of glazed, Far Eastern, and Indian ceramic classes above have also been used to begin to elucidate the changing regional patterns of ceramic trade in the Western Indian Ocean by illustrating periods of similarity and periods of divergence between Kush/al-Mataf and Shanga.

At the present time comparison of occurrence profiles is based on sequences from only two sites but, were enough sequences to be available it would, by combining them, be possible to establish the theoretical regional or even Indian-Ocean wide occurrence profile of a particular class. This could then be used as a yardstick against which occurrence profiles from individual sites or areas could be compared. This would be a powerful tool not only for understanding regional patterns of trade and economic development through time, but also for investigating to what degree individual sites or localities followed the regional pattern and when, and to what degree, they differed from it. At the present time there is too little data available to permit this analysis to go any further. The potential, however, is clear and it is also clear that it is not really possible to interpret fully the occurrence profile of ceramics from a single sequence in isolation from the regional occurrence profile, because it is not possible to establish which developments are site-specific and which are regional.

Chapter 5: Ceramic chronology and periodisation

Chronology

The Sasanian and Early Islamic Assemblages from Kush

The Period I and II assemblages from Kush allow us to characterise and compare the late Sasanian and Early Islamic assemblages from the Gulf.[15] The Period II assemblage is associated with a C^{14} date of the mid to late 7th century (above Chapter 2), and it is therefore almost certain that these two assemblages straddle the transition. Comparison of the two assemblages should therefore allow us to identify changes in ceramic manufacture, use and distribution that might have occurred during the Islamisation of this part of Arabia. It has, up to now, been almost impossible to isolate an Islamic assemblage of the later 7th century with which to do this. In addition, despite a considerable body of historical information, our understanding of the Sasanian archaeology of the Gulf littoral, including the Iranian side, has suffered due to the difficulty of reliably defining a late Sasanian ceramic assemblage (Kennet 2002b: 153).

The two assemblages are presented in Table 41 as sherd counts and as percentages of the overall assemblage by sherd count and in Table 42 by EVE.[16] There are notable quantitative differences between the two assemblages. For example, of the unglazed wares, FOPW, IRAB, and CLINKY are considerably more common in Period I than they are in Period II whilst WHITE.C, LISV, SMAG, IRPW and SBBW are the opposite. Given the effect of residuality, it seems likely that FOPW, which does not occur later than Period II, ceased to circulate during the 7th century. The significant presence of WHITE.C in Period II is notable and might be a very useful way of distinguishing between Sasanian and Early Islamic assemblages in the future. Other classes show no apparent difference, or are present in quantities that are too small to allow reliable comparison.

The most abundant class in both the Sasanian and Early Islamic assemblages by both EVEs and sherd count is Turquoise Glazed (TURQ), the occurrence of which is shown in **Fig. 6**. In relation to the whole assemblage, the proportion of TURQ declined very markedly from around 13.4% in Period I to 5.5% in Period II after which time it made up less than 2% of the assemblage, although it continued to be present until Phase III at al-Mataf. The considerable change within the subdivisions of TURQ between the two periods is shown by both EVEs and sherd counts. The subdivisions that predominate in Period I are TURQ.1, TURQ.2 and TURQ.4, all of these decline in Period II whilst only TURQ.3 increases.

Such a high proportion of glazed wares is notable. However, the figures are potentially complicated by the fact that the large jars that are common TURQ forms may have broken into large numbers of sherds thereby distorting the picture. Secondly, it is not possible to compare certain key coarse wares with TURQ such as CLINKY and SMAG whose body sherds were not isolated and counted during the study. Table 42 overcomes this by presenting the same data according to Estimated Vessel Equivalents (EVE) based on rim percentages (Orton *et al.* 1993 21, 168-173), which offers an alternative way of making comparisons that is not dependent on the number of sherds into which vessels break. Interestingly the EVE totals suggest that the sherd count has actually under-represented the proportion of glazed wares. According to the EVEs as much as 43% of the Period I assemblage was glazed. As was pointed out under the discussion of TURQ in Chapter 3, the high proportion of glazed wares is a phenomenon also noted at the nearby Hellenistic to Sasanian-period sites of Mleiha and al-Dūr. However, a lack of quantified contemporary assemblages from sites further afield means that it is impossible to know if this is a characteristic of all sites of this period, or whether it is restricted to the Oman peninsula.

As might have been expected, relatively few dramatic changes in ceramic manufacture, design and use accompanied Islamisation. The changes that have been identified represent the gradual development of the late Sasanian assemblage, rather than a completely new set of pottery classes and types such as occurred in the early 9th century.

Perhaps the most significant change is the increase in South Asian pottery in the early Islamic period. This needs to be confirmed by studies from other sites as it may be a phenomenon unique to Kush, but it might be indicative of hitherto unexpected changes in the pattern of maritime trade and contact that occurred at around this time.

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[15] An outline of the following section has already been published (Kennet 2002b) where the Gulf was referred to as 'Southern Iran and Eastern Arabia'.

[16] It should be noted that there are some minor differences between the numbers presented here and those presented in Kennet 2002b: table 1 because the final revision of the Kush ceramic sequence took place after Kennet 2002b was written.

		Sherd count		Percentage	
	CLASS	**Period I**	**Period II**	**Period I**	**Period II**
GLAZED	TURQ.1	71 (17)	31 (3)	2.22	0.82
	TURQ.2	285 (68)	36 (10)	8.92	0.95
	TURQ.3	28 (6)	80 (9)	0.88	2.11
	TURQ.4	41 (26)	38 (5)	1.28	1.00
	TURQ.5		3 (0)		0.08
	TURQ.NRE	3 (3)	20 (2)	0.09	0.53
	TURQ Total	**428 (120)**	**208 (29)**	**13.40**	**5.49**
FINE	FOPW	24	7	0.75	0.18
	FOPW.2	5	2	0.16	0.05
	WHITE.C	1	31	0.03	0.82
	EGG		1		0.03
COARSE	CLINKY*	46	9	1.44	0.24
	SMAG*	8	31	0.25	0.82
	LISV	5	18	0.16	0.48
	FLAKEY*		2		0.05
	BEARTH		1		0.03
	JULFAR	3	4	0.09	0.11
	TORP	4	4	0.13	0.11
	UNCLASS-U*		1		0.03
INDIAN	IRPW	1	20	0.03	0.53
	FIRE	6	8	0.19	0.21
	SBBW		9		0.24
	IRAB	22	4	0.69	0.11
	PAINT		4		0.11
	INDIA	2	1	0.06	0.03
	Indian Total	**31**	**46**	**0.97**	**1.21**
TOTAL		**3195**	**3787**		

*Table 41: The principle classes in the late Sasanian (Period I) and Early Islamic (Period II) assemblages at Kush by sherd count (Note: coarse wares marked * have sherd counts that are based on diagnostic sherds only (e.g. rims, bases, handles), whereas other classes include all sherds. The figures in brackets after TURQ sherd counts indicate the number of rim sherds).*

		EVE		Percentage	
	CLASS	**Period I**	**Period II**	**Period I**	**Period II**
GLAZED	TURQ.1	70.0	10.0	4.92	1.22
	TURQ.2	309.0	46.0	21.73	5.63
	TURQ.3	35.0	34.5	2.46	4.22
	TURQ.4	178.0	19.0	12.52	2.33
	TURQ.5				
	TURQ.NRE	17.0	16.0	1.20	1.96
	TURQ Total	**609.0**	**125.5**	**42.83**	**15.36**
FINE	FOPW	52.0		3.66	
	FOPW.2				
	WHITE.C		31.0		3.79
	EGG				
	Fine Total	**52.0**	**31.0**	**3.66**	**3.79**
COARSE	CLINKY	440.0	72.0	30.94	8.81
	SMAG	93.0	240.0	6.54	29.38
	LISV	42.0	3.0	2.95	0.37
	FLAKEY				
	BEARTH		10.0		1.22
	JULFAR	13.0		0.91	
	TORP	12.0	12.0	0.84	1.47
	UNCLASS-U		9.0		1.10
	Coarse Total	**600.0**	**346.0**	**42.19**	**42.35**
INDIAN	IRPW	2.0	20.0	0.14	2.45
	FIRE				
	SBBW		5.0		0.61
	IRAB	11.0	4.0	0.77	0.49
	PAINT				
	INDIA				
	Indian Total	**13.0**	**29.0**	**0.91**	**3.55**
TOTAL		**3195**	**3787**		

Table 42: The principle classes in the late Sasanian (Period I) and Early Islamic (Period II) assemblages at Kush by EVE.

Periodisation

One of the most important archaeological applications of a ceramic sequence is for the dating of surface collections of pottery, especially from sites located by field survey. Indeed, the lack of a dated sequence has been an impediment to the surveys that have so far been undertaken in the Gulf. The earliest examples are the pioneering studies carried out in the mid to late 1970s by Whitcomb on survey material from al-Hasa and Oman (e.g. Whitcomb 1975, 1978), by Potts *et al.* on the Eastern Province survey (Potts *et al.* 1978), and by Larsen on survey material from Bahrain (Larsen 1983: 271-293). The approach and chronological framework used by these studies follow the methodology adopted by Adams in his survey of the central floodplain of the Euphrates (Adams 1981). This approach divided the Islamic period very coarsely into three sub-periods, each up to 450 years long: Early Islamic (630-1055), Middle Islamic (1055-1500), and Late Islamic (1500-1750), the later Islamic period being subdivided into a Late Islamic I and II in some cases (e.g. Whitcomb 1978: 102-4) (Table 43). Each period was represented by a number of unique ceramic 'type fossils'.

However, the lack of a dated sequence made it difficult to allocate many of the most common glazed wares to one of the three periods, and impossible to allocate most of the unglazed wares. To overcome this Whitcomb attempted to establish a relative chronology by seriating the surface assemblages from the al-Hasa oasis (Whitcomb 1978: 96-98). At the same time both he and Larsen were forced to make reference to a small unpublished excavation from Qalaᶜat al-Bahrain that gave a rather inadequate sequence for the Sasanian and Islamic periods (Larsen 1983: 252-3, fig. 55).

Century	**Period**
7th	Early Islamic (630-1055)
8th	
9th	
10th	
11th	
12th	Middle Islamic / Medieval (1055-1500)
13th	
14th	
15th	
16th	Late Islamic (1500 - 1750)
17th	
18th	

Table 43: Periodisaton of Islamic ceramics used by Whitcomb (1975, 1978), Potts et al. *(1978), and Larsen (1983).*

The lack of a dated sequence caused a number of fundamental problems with these early studies. The first relates to the identification of Sasanian-period sites. This question has recently been dealt with by the present author (Kennet 2002b), where it is pointed out that none of the surveys mentioned above was able to isolate a Sasanian-period ceramic corpus. Larsen established a set of six Late Parthian Sasanian type fossils from the sounding at Qalaᶜat al-Bahrain (1983: 252-3, fig. 55) but Potts has reconsidered this material, pointing out that the basis of Larsen's dating is flawed (Potts 1990ii: 108-9). The second issue is the meaning of 'Early Islamic'. The earliest recognisable wares used by these studies were those of the so-called Samarra horizon (see above Chapter 3), which are now known to date from the early 9th century onwards. However, in the 1970s some researchers still followed Adams' flawed dating from Tel Abu Sarifa (Adams 1970), which suggested that they could be dated to the 8th century or earlier (e.g. Potts *et al.* 1978: 14). Others simply ignored the period between the 6th and the 9th century because, despite an awareness that some of the turquoise alkaline glazed wares (TURQ) were in circulation, there were no firmly-dated type fossils at all for this period. In each of these studies 'Early Islamic' therefore refers, in effect, to the 9th and 10th century, whilst the key period between the 6th and the 9th century is not dealt with. A third issue is the almost complete absence of ceramics datable to the later 11th, 12th and 13th centuries, such as the later sgraffiatos and early frits (e.g. GGRAF, FRIT.F etc). The absence of occupation of this period is a phenomenon that is well known from the Arabian shores of the Gulf, though it does not affect Oman (e.g. Whitcomb 1975: 126-8). The absence was commented on by some scholars (Potts *et al.* 1978: 14) but others, such as Larsen, appear to have remained oblivious to the issue and the key question of late 11th to 13th century occupation is therefore not addressed. A further issue is the fact that many of the type fossils used to identify Middle Islamic and Late Islamic are either not securely dated (e.g. Whitcomb 1978: pl. III - VIII), or continue in use across the Middle and Late Islamic periods (e.g. Larsen 1985: 297-283: celadon, Chinese influenced ceramic forms, cooking wares. Potts *et al.* 1978: Chinese porcelain, Khunj etc) rendering these chronological criteria of doubtful value, especially when used as a basis for quantified analysis of settlement data.

The Siraf excavations were expected to resolve many of these issues. The Siraf sequence begins in the Sasanian period - possibly as early as the 4th century, but more likely some time in the later Sasanian or even early Islamic period - and continues until the 16th century, although the post-13th-century levels are not well represented. The excavations were conducted according to stratigraphic principles and yielded a large amount of numismatic evidence so that, in theory, the site ought to be able to provide a well-dated, quantified ceramic sequence. Unfortunately the excavations have never been fully published and only an outline study of the ceramics is available (Tampoe 1989). Tampoe proposed a five-fold ceramic periodisation for the Islamic and Chinese glazed ceramics based principally on the excavations at Site B (the fort and mosque). The Islamic aspect of these

Ras al-Khaimah code	Tampoe's name	Tampoe's code	Tampoe ceramic assemblage				
			CA 1	CA 2	CA 3	CA 4	CA 5
			4th - 7th?	800 - 900?	900 - 1000	1000-1300	1300-1590
TURQ	Blue-glazed ware	SI	large	large	large	?	fair
YBTIN	Plain white glazed ware	WGa		some	fair	?	large
COBALT	Cobalt splashed white	WGb		tiny	little	?	
COBALT?	Turquoise splashed white	WGc		tiny	fair	?	
SPLASH?	Bichrome splashed white	WGd		tiny	some	?	
SPLASH	Lead splashed ware	LSW		little			
?	Yellow glazed	YG		some			
GMONO?	Mono. green or Late green	LSWa		little	large	?	fair
GMONO?	Mono. green or Late green	LG)			fair	?	large
EGRAF	Style I Sgraffiato	LSWc			fair	?	v. large
EGRAF?	Style II Sgraffiato	LSWf? (b)			little	?	
HGRAF	Style III Sgraffiato	LSWg? (d)			some?	?	
LUSTRE	Early lustre	LWa			some	?	
SPLASH?	Lead splashed dec.	LSWb			little	?	
FRIT.L	Saljuq frit lustre	LWb				some	fair
?	Black glazed	BGW				little	large
FRIT.W	Saljuq frit body plain	SWGa				large	
FRIT.T	Turquoise frit	OBGa				some	fair
FRIT.T/C	Turquoise or Cobalt Frit	OBGb				fair	v. large
UNDERGL	Underglaze painted earthen?	OBCc					large
?	Green sketchy incised dec.	LSWd					v. large
	Chinese ceramics	varies		yes	yes	yes	yes

Table 44: A summary of Tampoe's five ceramic assemblages (from Tampoe 1989: 6-9, 69-74).

Ceramic Period	Sub Period	Key ceramic markers	Proposed dates	Suggested Name
I	I a	TURQ esp. types 94, 62, 64; CLINKY predominant; SMAG; Indian wares esp. IRAB; FOPW still common.	5^{th} & 6^{th}	Sasanian & Early Islamic
	I b	TURQ esp. types 94, 62, 64; CLINKY rare or extinct; SMAG predominant; Indian wares; FOPW rare or extinct; WHITE.C begins; WHITE.F begins; IRPW.	7^{th} & 8^{th}?	
II	II a	YBTIN; COBALT; EGG begins & common; WHITE.F common; SPOT & SPOT.C begins	9^{th}	Samarran Abbasid
	II b	LUSTRE; SPLASH; EGRAF. Coarse wares probably as IIa.	10^{th} early 11^{th}	Post-Samarran Abbasid
III	III a	HATCH; MGPAINT.1; GMONO.	early to late 11^{th}	Late Kush
	III b	GGRAF; BGRAF; MGRAF; PGRAF & other later sgraffiatos; MGPAINT.1; GMONO; WAPO; early frits (FRIT.F, T, L, B, C); Chinese wares GWW, GGW, CWW, DHM, limited LQC; JULFAR begins (types CP0.1, CP0.2, CP0.3 also CP1.2).	later 11^{th}/12^{th} to late 13^{th}	
IV	IV	LQC common; WPINK; LIME; later frits (FRIT.BW, TB); UNDERGL; JULFAR esp. type CP1.2; MTB probably rare.	1300 or 1350 to 1450??	Early al-Mataf
V	V	CBW; WPINK; JULFAR types CP1.1, B1.1, B1.4, J2.1, J2.3; JULFAR.1 common; PERSIA; KHUNJ; LQC rare?; UNDERGL; MTB common.	1450?? to 1570/1600	Late al-Mataf
VI	VI a	SWATOW?; KRAAK; KHUNJ; MGPAINT.2; BUFF; JULFAR types CP1.1, CP5?.	1600 - ??	Post al-Mataf
	VI b	WILLOW; REDYELLOW; MGPAINT.2; JULFAR types CP4, CP7.	?? - 1950's	

Table 45: Proposed Sasanian and Islamic 'Ceramic Periods'.

assemblages is summarised in Table 44 where the classes used by Tampoe are, where possible, linked (in the left-hand column) to those described above in Chapter 3.

Tampoe's study was based largely on the pottery record cards that were filled out by the Siraf excavators during fieldwork. She was unable to see much of the pottery from the site at first hand and this explains why she perpetuated some of the errors to be found in Whitehouse's early interim reports on the site relating to the dating of the Samarra horizon (above Chapter 3). It also may explain why she was unable to incorporate the unglazed pottery from the site into her five ceramic assemblages. There are other problems with her analysis, but this last failing undermines much of the potential value of her work, especially in terms of its applicability to ceramics from field survey.

During the archaeological survey of the hinterland of Suhar on the Bāṭinah coast of Oman the same Early/Middle/Late subdivision of the Islamic period was used (Costa & Wilkinson 1987: 225-229). In this case an attempt was made to use a more precise periodisation to outline the historical development of Suhar (*ibid.*: 231): A - Sasanian /Early Islamic. B - 9^{th} to 10^{th} century; C - 11^{th} to 12^{th} century; D - 13^{th} to 15^{th} century; E - 16^{th} to 20^{th} century; F - Late 20^{th}. Unfortunately, with the exception of period B, Costa and Wilkinson did not specify the pottery type fossils that they had used so it is now impossible to review and evaluate their conclusions.

It is clear that there are significant problems with all of the chronological and ceramic sequences discussed above. Firstly, the inability to date the unglazed pottery that normally makes up about 90% of surface collections greatly reduces the reliability of survey data. Secondly the type fossils are not always clearly specified, and in many cases are not reliably dated. Thirdly, the Early/Middle/Late Islamic periodisation is far too crude to allow anything but a very simplistic level of analysis of settlement patterns and economic development.

An updated and more precise periodisation is therefore proposed here (Table 45). It is a mistake to approach this by creating historical or chronological periods into which to fit the pottery sequence. Instead it is more sensible to create 'Ceramic Periods' that effectively describe the development of the pottery sequence, and that can be linked to an absolute chronology only as a second stage. This approach recognises that within the development of the pottery sequence there are periods of stability interspersed with periods of rapid change. It also acknowledges that, although it is relatively easy to subdivide the pottery sequence, it is much more difficult to attach firm dates to the subdivisions. To illustrate this with examples: what we might call Ceramic Period I is the Sasanian and early Islamic assemblage, which, from the beginning of the Kush sequence to the end of Kush Period II, is essentially the same assemblage that underwent only subtle quantitative and qualitative changes. However, at the beginning the 9th century there were some technical and stylistic developments which brought about a period of very rapid change - the 'Samarra horizon' - and heralded the introduction of Ceramic Period II. Once implemented, the new styles underwent about two centuries of much slower stylistic development based on the same technical and stylistic themes. The next significant change (Ceramic Period III) was the introduction of the later sgraffiatos - initially HGRAF followed by GGRAF and PGRAF etc. This development cannot yet be firmly dated, but appears to have taken place between the middle of the 11th and the middle of the 12th century. Along with the new sgraffiatos, frit wares began to circulate together with a new range of unglazed pottery such as WAPO and a higher percentage of Chinese imports. There are some indications that the motivation for these changes was predominantly commercial. It was only at the end of the Kush sequence, probably towards the end of the 13th century, that the next change occurred (Ceramic Period IV) with the decline of the Iranian sgraffiato industries, the increasing predominance of Longquan celadons, a new range of frit wares such as those found at al-Mataf, and the development of the local Julfar pottery industry (JULFAR). The fifth Ceramic Period (V) - the later al-Mataf assemblage as discussed in Chapter 2 - is a development of Ceramic Period IV. It encompasses the introduction of Blue and White porcelain (CBW) as the predominant Chinese class as well as the advent of KHUNJ and some developments in the form of JULFAR cooking pots. The following Ceramic Period (VI) is still somewhat speculative as it has not yet been clarified by excavation.

The Ceramic Periods are presented and defined in Table 45 where a preliminary dating is proposed where possible. The six Ceramic Periods are sub-dividable into a total of 10 sub-periods, thereby providing a much more precise periodisation than the earlier Early/Middle/Late system. Of course in some cases it will be almost impossible to distinguish between the sub-periods in surface collections, because the differences are quantitative rather than being marked by the appearance of new types, or the disappearance of old ones. It will certainly be possible further to subdivide Ceramic Period IV once excavation and quantified study has been conducted.

Appendices

Appendix 1: Pottery Classification Methodology

The aims of the pottery study were to define archaeologically meaningful ceramic classes, to elucidate a chronology that could be used to date sites from field survey, and to investigate change through time by quantitative comparison of assemblages.

Initially the pottery was catalogued using a multivariate system: for each sherd fabric, decoration, technique of manufacture, type or form, and other variables were recorded (see below). Fabrics were defined and described visually using a x10 hand lens. However, it soon became clear that the vast majority of the material could be divided into groups or 'classes' which display a consistently similar range of fabric, decoration, form and other variables. Therefore only 'class' and 'type' were recorded for such sherds whilst fabric was recorded only where there was discernible variation within a class (e.g. YBTIN).

The term 'class' may have slightly different archaeological meanings in different cases: in some cases it is used to represent the products of a single kiln or manufacturing centre (e.g. JULFAR), in others it represents a stylistic concept that was probably manufactured at a number of centres over a wide area (e.g. GGRAF, LISV). There is considerable flexibility in the concept but in all cases it is intended that each class represents an archaeologically meaningful group of pottery, that is to say a group that existed in some form or another in the past, and whose chronology and/or distribution will be archaeologically significant.

Those sherds that could not be classified in this way were recorded as 'Uniques' and were drawn, described, and photographed. The Uniques will not be dealt with in this study, but will be included in the final publications of Kush and al-Mataf.

To allow easy data retrieval and analysis the pottery was recorded using a relational electronic database. Each sherd or group of sherds with identical characteristics was recorded using a single database-record with the following fields:

CONTEXT	The excavated context or layer number or site/area number for survey material.
CLASS	Denoting a group of pottery with consistently similar fabric, technique of manufacture, and decoration. There is no intention to suggest that classes were manufactured at the same place, although some may have been. The classes are described in Chapter 3.
SHERD	Body sherd: e.g. rim, handle, base etc.
TYPE	Over 130 rim, base, and handle types were defined and described. The types are described in Chapter 3 under the descriptions of individual classes.
FABRIC	Fabrics were examined, subdivided, and described using a x10 hand lens. The key Kush fabrics are described in Appendix 3.
QNT	Number of sherds with identical characteristics.
EVE	Estimated vessel equivalent for rim sherds only (see below).
DEC	Kush only: a decoration typology was established that will be published in the final Kush report.
NOTE	Extra information about the sherd, i.e. drawing number, repair hole, etc.

Quantification & Collection Strategy

At Kush all excavated earth was sieved through a 3mm sieve. At al-Mataf much of the earth was sieved at 3mm but, unfortunately, no record was kept of which contexts were not sieved. For those contexts that were sieved, retrieval is thought to be close to 100%.

Quantification was principally by sherd count as it is the fastest and most cost-effective method. The problem with sherd counts is that certain types of vessels that break into a large number of sherds tend to be over-represented and the opposite is true for those that break into a small number of sherds. This can be exacerbated when levels of brokenness increase. Therefore, in order to have some understanding of the brokenness and comparability of the Phase assemblages, some use was also made of weights and estimated-vessel-equivalents (EVEs) based on rims. The analysis of brokenness presented in Chapter 4 does not suggest that it has significantly affected the results of

CONTEXT	CLASS	SHERD	TYPE	FABRIC	QNT	EVE	DEC	NOTE
1186	JULFAR	S			1		Internal paint	
1186	JULFAR	R	25		1	3.5		Draw 1336
1186	KHUNJ	S			4			Repair hole
1186	KHUNJ	R	105		1	7		
1192	MTB	S			2			
1192	WHITE	S		3	1			

Table 46: An example of the output from the database used to catalogue the pottery showing the categories of information recorded for each sherd.

this study. Eventually, as with all quantified and comparative studies of pottery assemblages, one is forced to work on the assumption that the relativities between the life spans of different types and classes remain constant between the assemblages compared - in this case principally from different phases of two sites (Orton *et al.* 1993: 167).

For practical reasons the quantification strategy varied slightly between sites: all sherds from both sites were collected and counted, but at al-Mataf a sample of contexts from each Phase was also quantified by EVE and weight. At Kush all rim sherds were EVEd but nothing was weighed.

Appendix 2: Significant Absences

Part of this analysis involves negative evidence, that is to say the absence of a class from an assemblage is taken as an indication that the particular class was not in circulation at the time that the assemblage was deposited. This is valid for very common classes whose absence is otherwise difficult to explain, but it is more problematic for rare types. Generally we have taken the absence of a class or type from an assemblage as being significant if we would have expected four or more sherds in that assemblage based on the class's average abundance and the size of the assemblage. Four was chosen because, according to a Poisson distribution, if the expected number of sherds is more than four, the chance of observing zero in assemblages of the size we are dealing with would be less than 5%, which is generally taken as being an acceptable level of doubt in statistical analysis. So, if a particular class normally constitutes 1% of assemblages in which it occurs, and it is not present in an assemblage of 400 sherds, we would take this absence to be significant, whereas the same class's absence from an assemblage of 100 sherds would not normally be used to suggest that it was not in circulation. Obviously, the higher the number of sherds expected, the more likely the absence is to be significant. Some flexibility and intuition has also been employed, for example where a particular type shows consistent increase or decline through time.

Fortunately, most of our assemblages are quite large. The main problem comes from the relatively small assemblages of Phases Pre and I at al-Mataf (21 and 438 sherds respectively). Due to their small size they are ignored in some of the analysis.

Appendix 3: Kush Pottery fabrics.

To date no technological study has been undertaken on Sasanian and Islamic ceramics from Ras al-Khaimah, though work has been started. At Kush seven fabrics were defined and described visually using a x10 hand lens.

Fabric 1.
Fine, hard, reddish yellow (5YR 7/8 - 7.5YR 8/6) earthenware with a smooth fracture and very few inclusions: 1 - 2 mm irregular voids; 0.1 mm lime spalling which is so fine as to be almost invisible without a lens.

Fabric 2.
Soft, powdery, and friable, pale yellow (2.5Y 8/3) earthenware with a hackly fracture and no clearly visible inclusions apart from fine sand (0.2 mm, rounded, well sorted). The clay has a grainy structure and numerous small (0.1 mm) voids. Fabric tends to be quite thick walled.

Fabric 3.
Fine, hard, reddish yellow (5YR 7/8) earthenware with a sub-conchoidal fracture. The only inclusions are very small linear voids and occasional fine white particles. This fabric is finer and deeper red than fabric 1.

Fabric 4.
Fine, hard yellowish red (5YR 5/6) earthenware with a slightly irregular fracture and a variety of sub-rounded, badly sorted quartz and black grits. The clay has a blocky structure with small, numerous voids. Mica is visible on external unglazed surface.

Fabric 5.
Very hard, white/off-white stone paste. Hard with a low specific gravity. Grainy structure with small inclusions of various colours. Numerous voids between the quartz grains.

Fabric 6.
Smooth, pale yellow (5Y 8/6) earthenware with a smooth fracture and medium hardness. Similar to fabric 7 from which it is distinguished by the presence of 5% 0.25 mm badly sorted sand/quartz grains.

Fabric 7.
As fabric 6 with no sand inclusions.

Appendix 4: Class Identification Tables

The following three tables are intended to facilitate the identification of pottery collected in the field. Classes are subdivided into Far Eastern & Chinese (Table 47), Glazed (Table 48), and Unglazed (Table 49) – which includes Indian and Prehistoric classes. Within these categories Far Eastern & Chinese and Glazed classes are grouped by glaze and then body colour, whilst Unglazed classes are grouped by fabric colour and then coarseness. The categories such as 'reddish', 'creamy', 'fine' etc are only general categorisations to aid identification: precise descriptions are given in Chapter 3.

Glaze	Body	Code	Name	No.
blue-&-white	white	CBW	Chinese Blue-and-White Porcelain (Jingdezhen)	64
		NONCHIN	Non Chinese Porcelain	65
		VIET	Vietnamese Blue-and-White	66
		SWATOW	Swatow	67
		KRAAK	Kraak or 'panelled wares'	68
		VPOLY	Vietnamese Polychrome	70
brown	pinky-white	MTB	Martaban	59
	creamy	BSTONE	Light Brown Glazed Stoneware	60
		GBSTONE	Grey-Bodied Dark-Glazed Stoneware	61
green	grey	GGW	Yue-type wares	49
		GRE	unidentified greenware	50
		LQC	Longquan Celadon	55
		SCHINA	Thai or South-China Celadons	56
		CEL	unidentified celadon	57
		DUSUN	Dusun	58
polychrome	grey	CHANG	Changsha polychrome underglaze painted stoneware	46
	white	POLY	Polychrome Glazed	69
		ENAM	Enamelled Porcelain	71
varies	white	MOD	Modern Porcelain	72
white	grey	YUEC	Yue ware	47
		CWW	Carved White-Stoneware Lotus Bowls	51
		DHM	Dehua Moulded Whiteware	52
		DHP	Dehua Plain Whiteware	53
		WHT	unidentified whiteware	54
	white	WPORC	White Porcelain	62
		EASTIN	Far Eastern White Glaze	63
yellowish	grey	GWW	South Chinese White Stoneware (Song)	48

Table 47: Identification table for Far Eastern & Chinese Classes.

Glaze	Body	Code	Name	No.
black	creamy	BLACK	Black Glazed Earthenware	39
blue	reddish	PERSIA	Persian Blue Speckled	30
blue-&-white	yellow	COBALT	Cobalt decorated white glaze	3
	creamy	WILLOW	Willow Pattern	37
	creamy frit	FRIT.C	Cobalt Frit	23
		FRIT.BW	Blue-and-White Frit	25
	reddish	BWEARTH	Blue-and-White Earthenware	38
blue-green	creamy	TURQ	Turquoise Glaze	1
blue-green & black	creamy	MGTURQ	Turquoise & Manganese	29
blue-green	creamy frit	FRIT.T	Turquoise Frit	21
		FRIT.TB	Turquoise and Black Underglaze-Painted Frit	24
brownish	creamy	MUSTARD	Mustard Glaze	34
	reddish	MGRAF	Monochrome Mustard Sgraffiato	12
	grey	IRONGL	Iron Glazed Storage Jars	43
	reddish grey	KHUNJ	Khunj or Bahla Ware	31
		DKHUNJ	Dark Khunj	32
green	creamy	LGREEN	Light Green Glaze/Creamy Imitation Celadon	33
		IMITCEL	Imitation Celadon	40
		GMONO.2	Monochrome Green Glaze	35
	reddish	GGRAF	Monochrome Green Sgraffiato	11
		MOTTLE	Mottled Green Monochrome	42
		GMONO.1	Monochrome Green Glaze	35
polychrome	creamy	SPLASH	Splashed	5
		MGPAINT	Manganese Purple Underglazed-Painted	27
	reddish	YSPLASH	Bright Yellow Splash	6
		EGRAF	Early Sgraffiato	8
		HGRAF	Hatched Sgraffiato	9
		YGRAF	Yellow Sgraffiato	10
		BGRAF	Two-Tone Sgraffiato	13
		PGRAF	Polychrome Sgraffiato	14
		CHAMP	Champlevé	16
		LGJARS	Large Glazed Jars	17
red & yellow	creamy	REDYEL	Red and Yellow	36
varies	creamy frit	FRIT.F	Fine Frit	18
	creamy frit	FRIT.B	Coarse Frit	22
	creamy frit	FRIT.DEG	Degraded Frit	26
	creamy or reddish	UNDERGL	Underglaze Painted Earthenware	41
	reddish	DGRAF	Degraded Sgraffiato	15
white	creamy	YBTIN	Plain Opaque White Glaze	2
	creamy frit	FRIT.W	White Frit	19
	creamy frit	FRIT.L	Frit Lustre	20
white & polychrome	creamy	LUSTRE	Lustre	7
white with black	creamy	BTIN	Black Decorated Tin Glaze	4
yellow	reddish	YEMEN	Yemeni Yellow	28

Table 48: Identification table for Glazed Classes.

Body	Coarse/ Fine	Distinguishing Features	Code	Name	No.
black	coarse		BEARTH	Black-Fired Earthenware	76
			THIN	Thin Black	85
		heavy burnish	SBBW	Black Burnished Ware	101
creamy	coarse	red or black slip	RBSLIP	Red-Black Slip	78
		finger impressions	HONEY	Honeycomb	80
			HONEYF	Honeycomb Fabric	81
		black inclusions	CHOC	Chocolate Chip / Black Angular Inclusions	82
			LSANDY	Large Sandy White Storage	86
		bitumen inside	TORP	Torpedo Jars	93
		black inclusions, very light weight	SPOT	Spotty ware	95
			WAPO	Cream Pots with Incised Wavy Decoration	96
	fine		WHITE	White Ware	75
		very thin	EGG	Eggshell	88
grey	coarse		SMAG	Small Grey Vessels	94
reddish	coarse	hand made, some painted	JULFAR	Julfar Ware	74
		incised decoration, hard fired	LISV	Large Incised Storage Vessels	77
		white inclusions	LIME	Lime-Tempered	79
		light buff colour	BUFF	Buff	84
		hand made	PROTO	Proto Julfar	87
		very hard fired	CLINKY	Clinky Fired Earthenware	91
			FLAKEY	Flakey Earthenware	92
			REDSPECK	Red Speckled Ware	97
		fragile, mica on surface	IRAB	Indian Red & Black	103
		red slip	RSLIP	Coarse Red-Slipped	105
			WSUQ	Wadi Suq Pottery	108
			IRON	Iron Age Pottery	109
	fine	white exterior	WPINK	Pink & White	83
		thin & red body	RED.EGG	Red Eggshell	89
		painted decoration	FOPW	Fine Orange Painted Ware	90
		red slip, very fine	IRPW	Indian Red Polished	100
			FIRE	Fine Indian Red	102
		painted decoration	PAINT	Painted Indian Earthenware	104
			UANF	Umm al-Nar Pottery	107

Table 49: Identification table for Unglazed Classes.

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Abbreviations

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PSAS - Proceedings of the Seminar for Arabian Studies.
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TOCS - Transactions of the Oriental Ceramic Society.

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Figures & Colour Plates

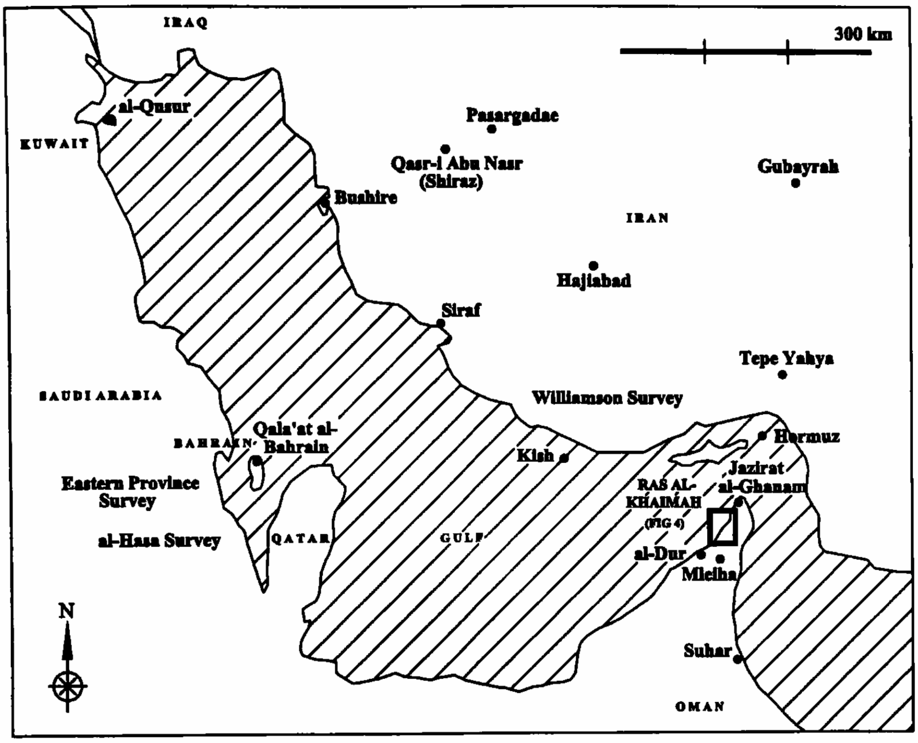


Fig. 1: Ras al-Khaimah and the Gulf showing the location of Fig. 4 and sites mentioned in the text.

Fig. 2: A view of Kush.

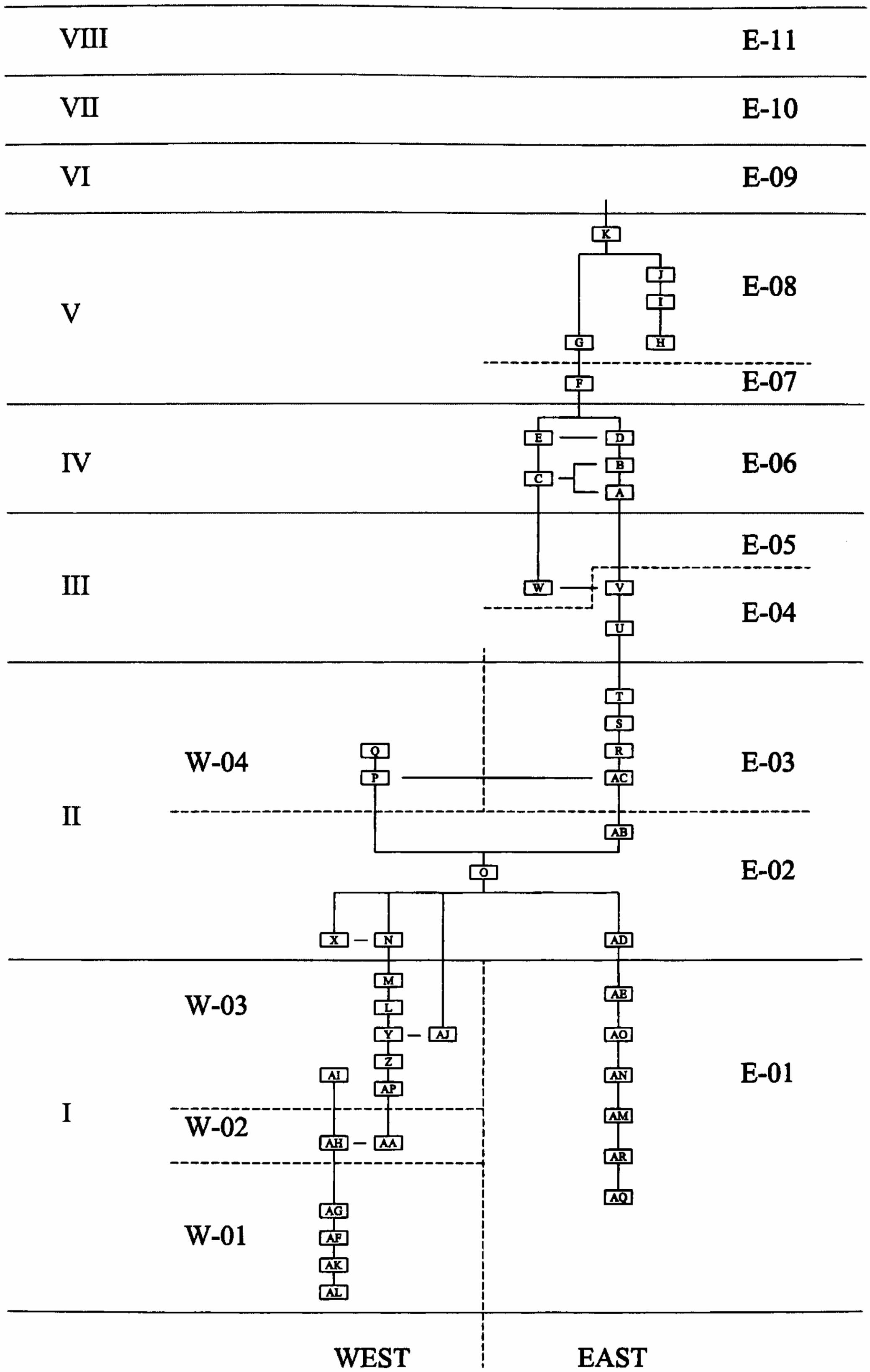


Fig. 3: The Kush Phase matrix showing Sub-Phases (A-AQ), Phases (E-01 to E-11, W-01 to W-04), and Periods (I - VIII).

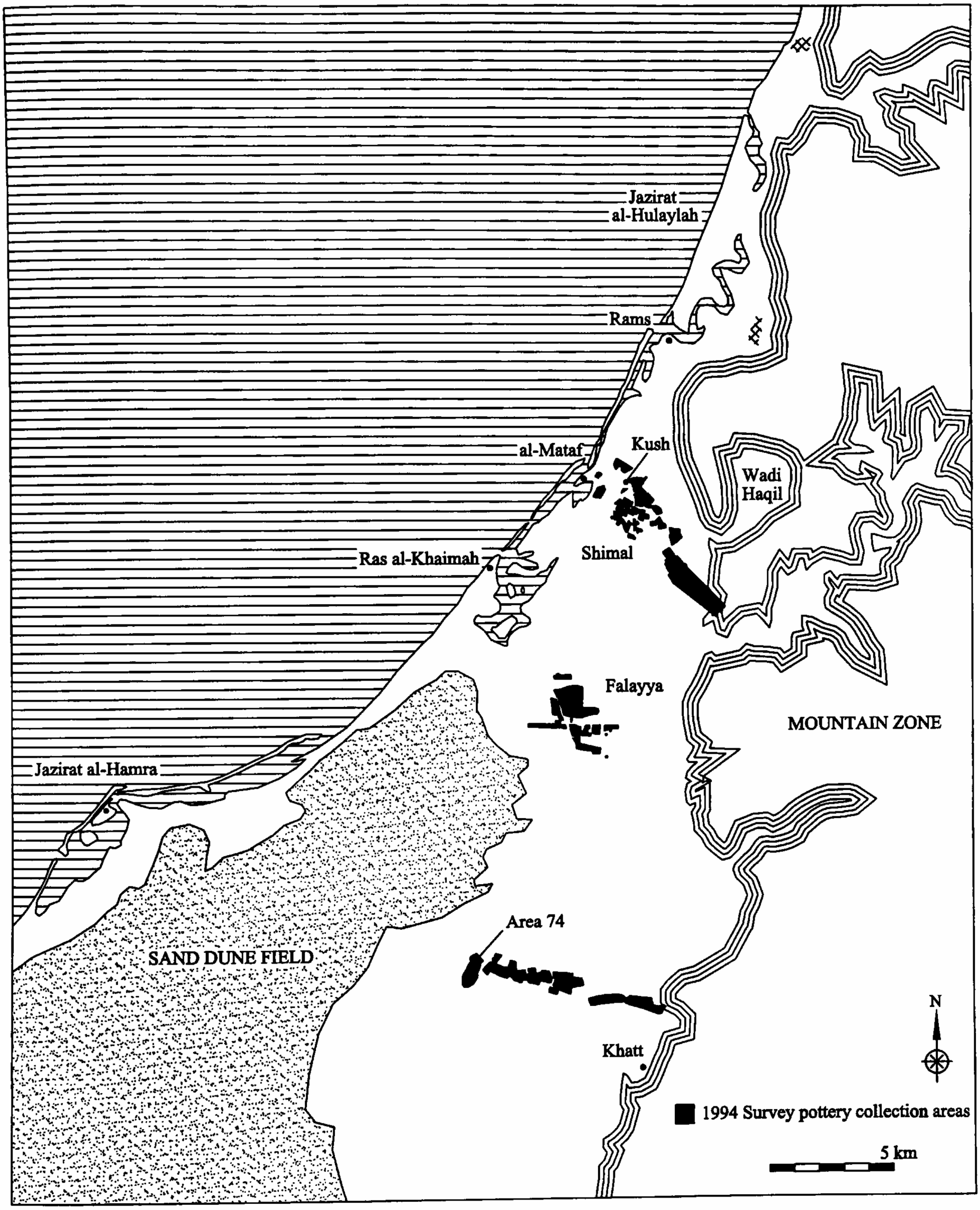


Fig. 4: Location of 1994 Survey transect areas and other sites in northern Ras al-Khaimah.

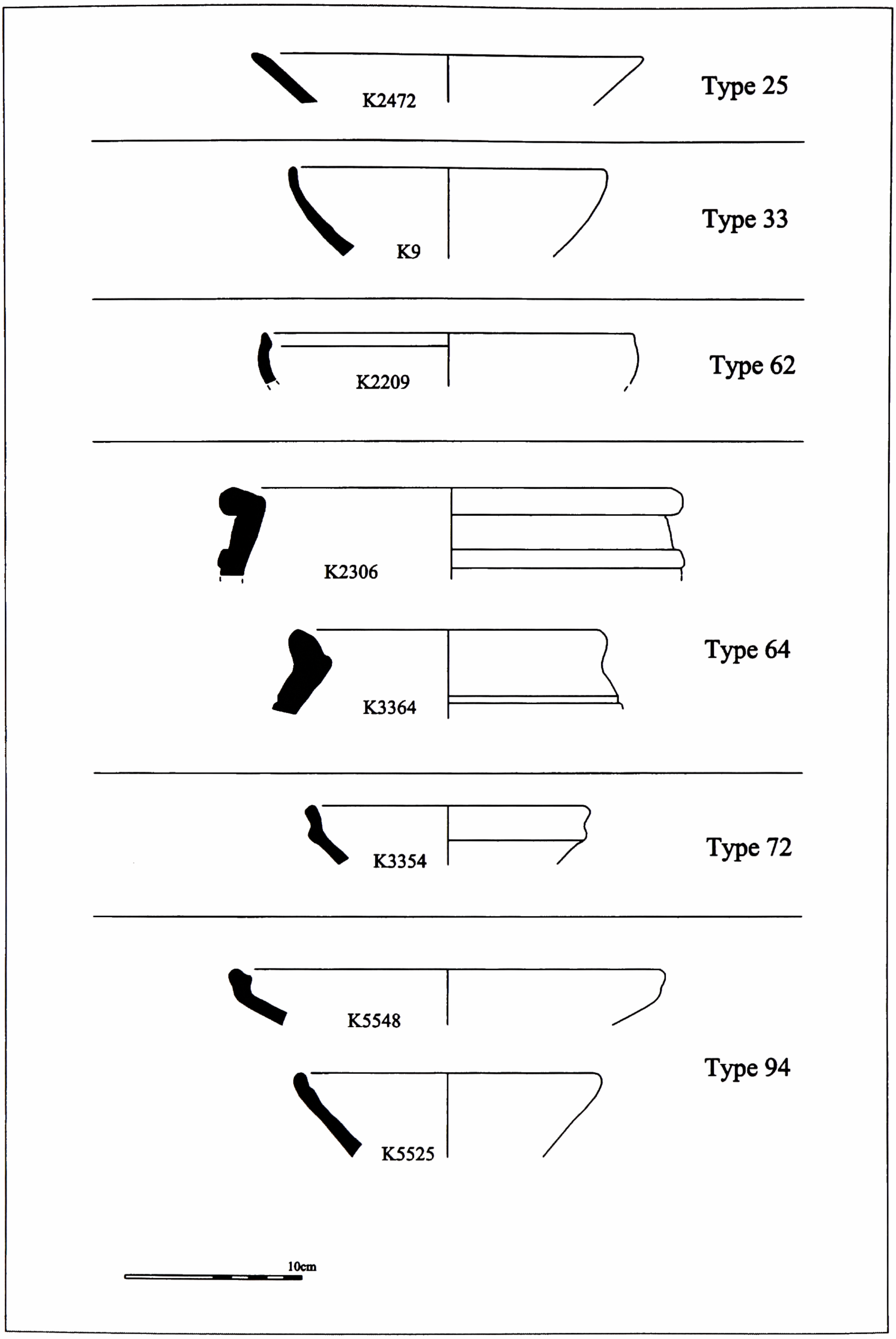


Fig. 5: TURQ types.

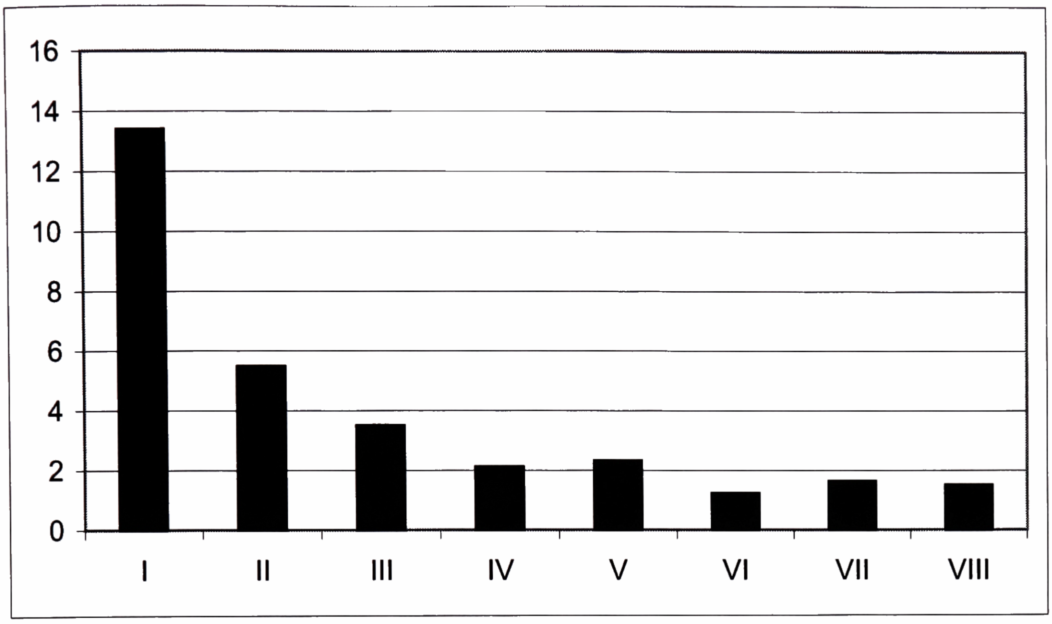


Fig. 6: Proportion of TURQ through the Kush sequence (sherd count as a % of total Period assemblage).

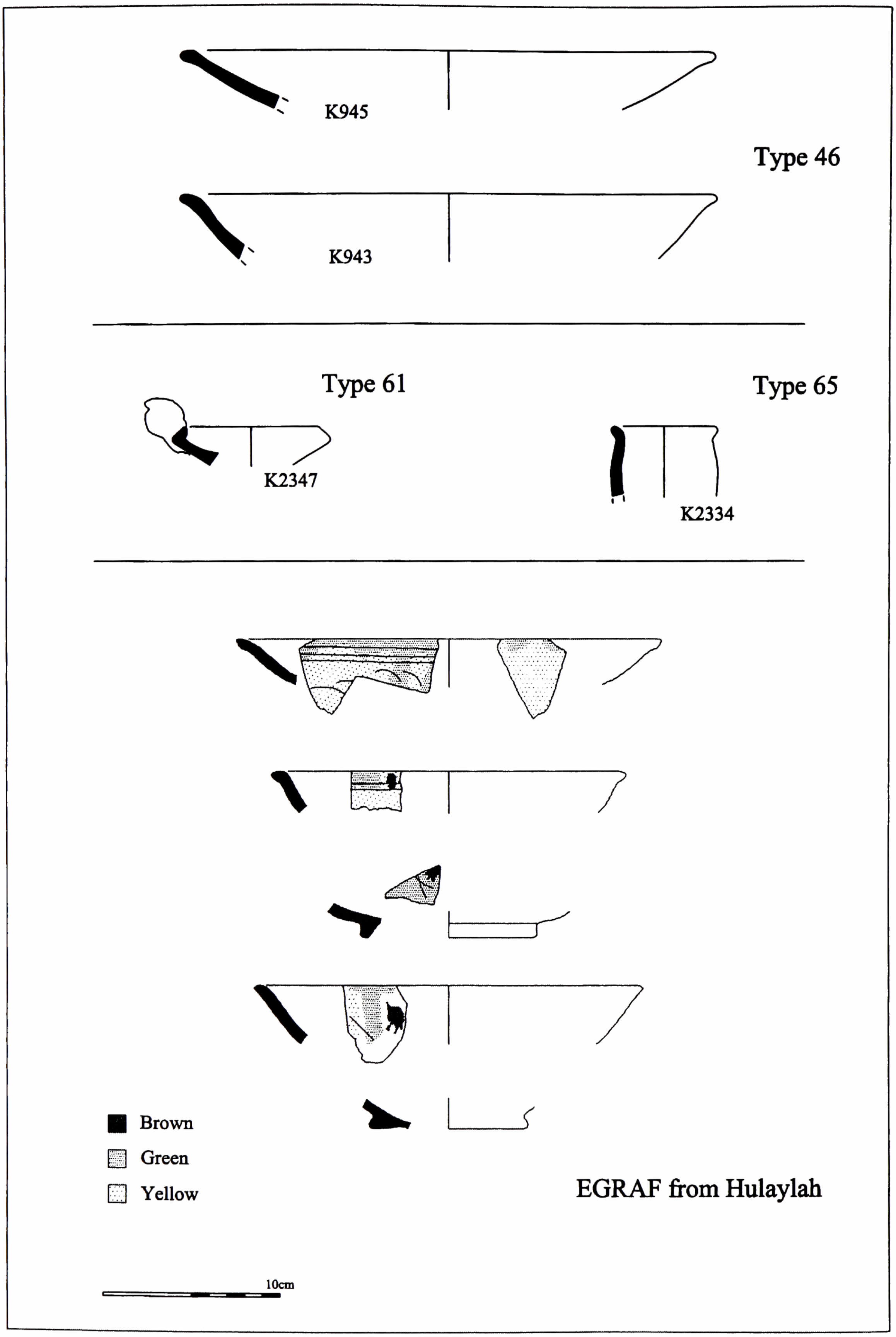


Fig. 7: Samarra Horizon types: 46, 61, 65 and EGRAF from Hulaylah.

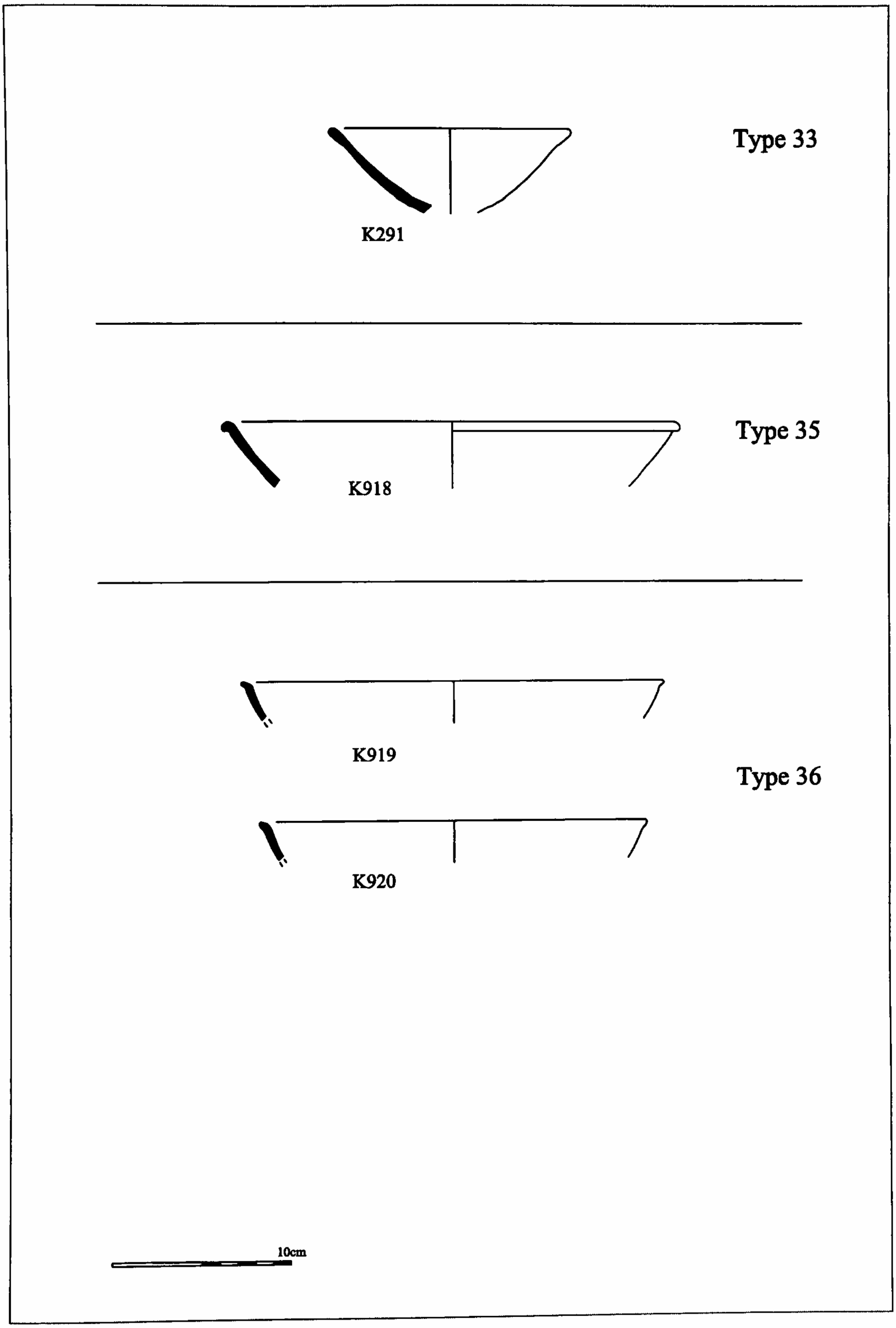


Fig. 8: DGRAF and HGRAF, types 33, 35, 36.

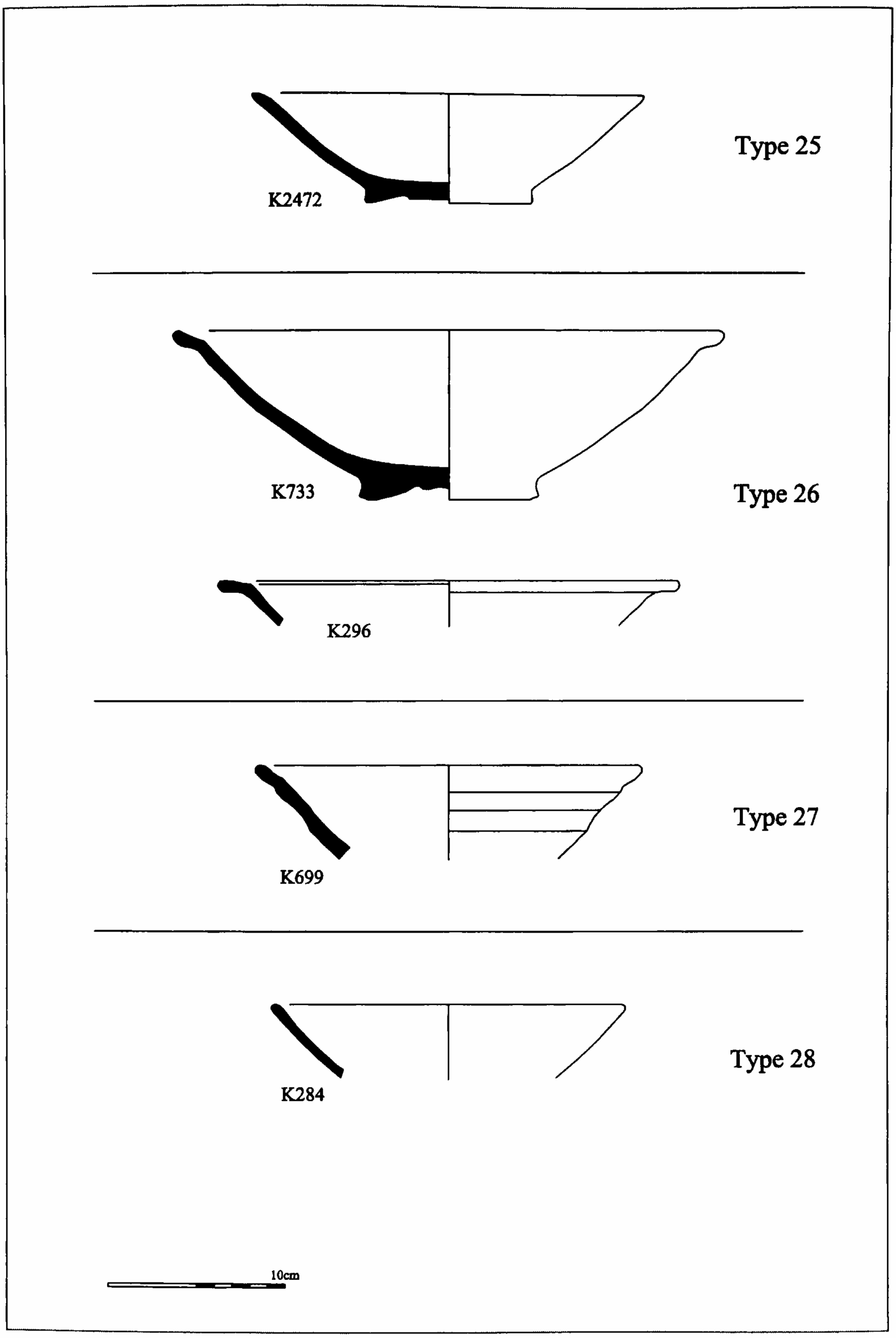


Fig. 9: BGRAF, GGRAF, MGRAF and PGRAF types 25, 26, 27, 28.

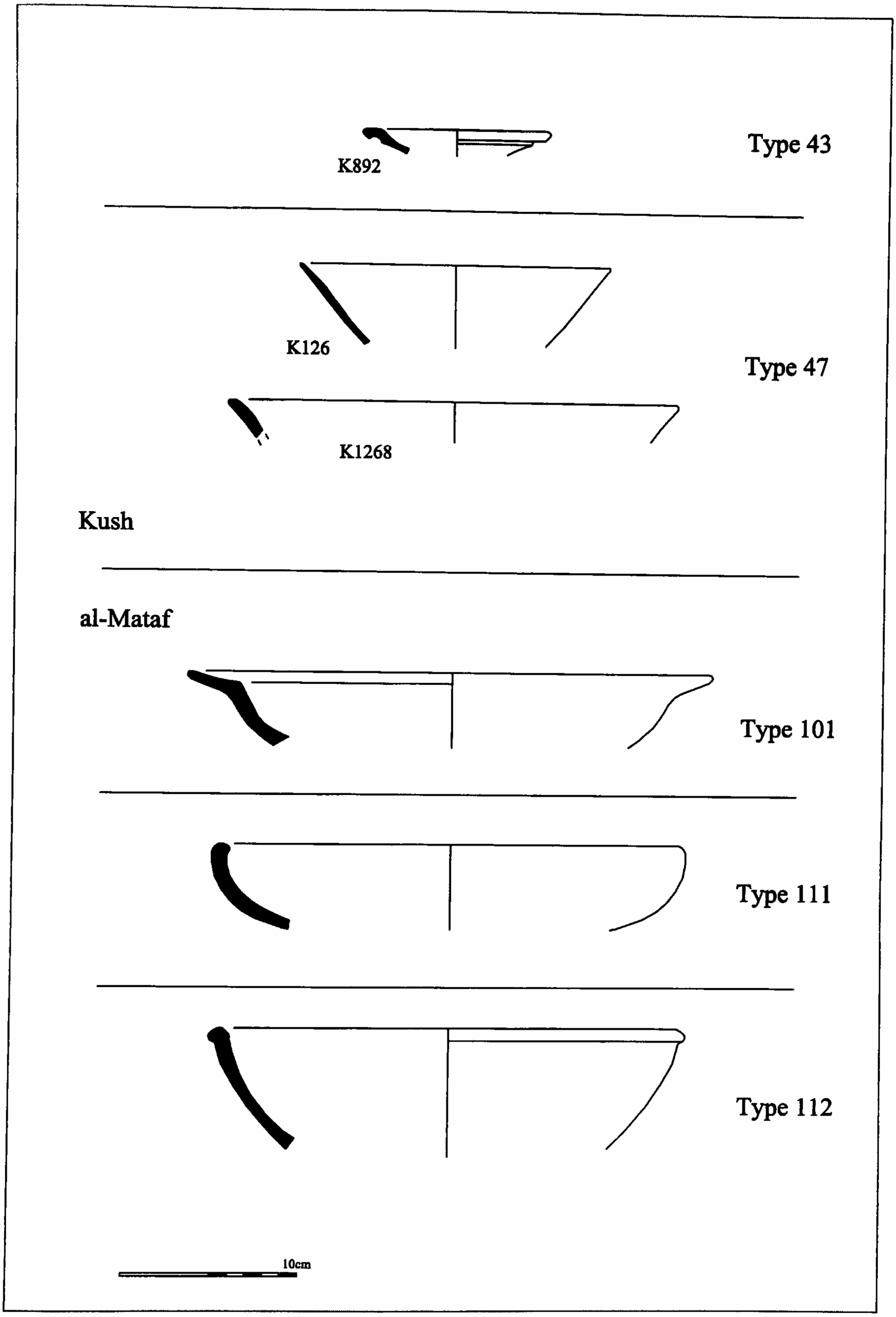


Fig. 10: Frit types 43, 47 (Kush), 101, 111, 112 (al-Mataf).

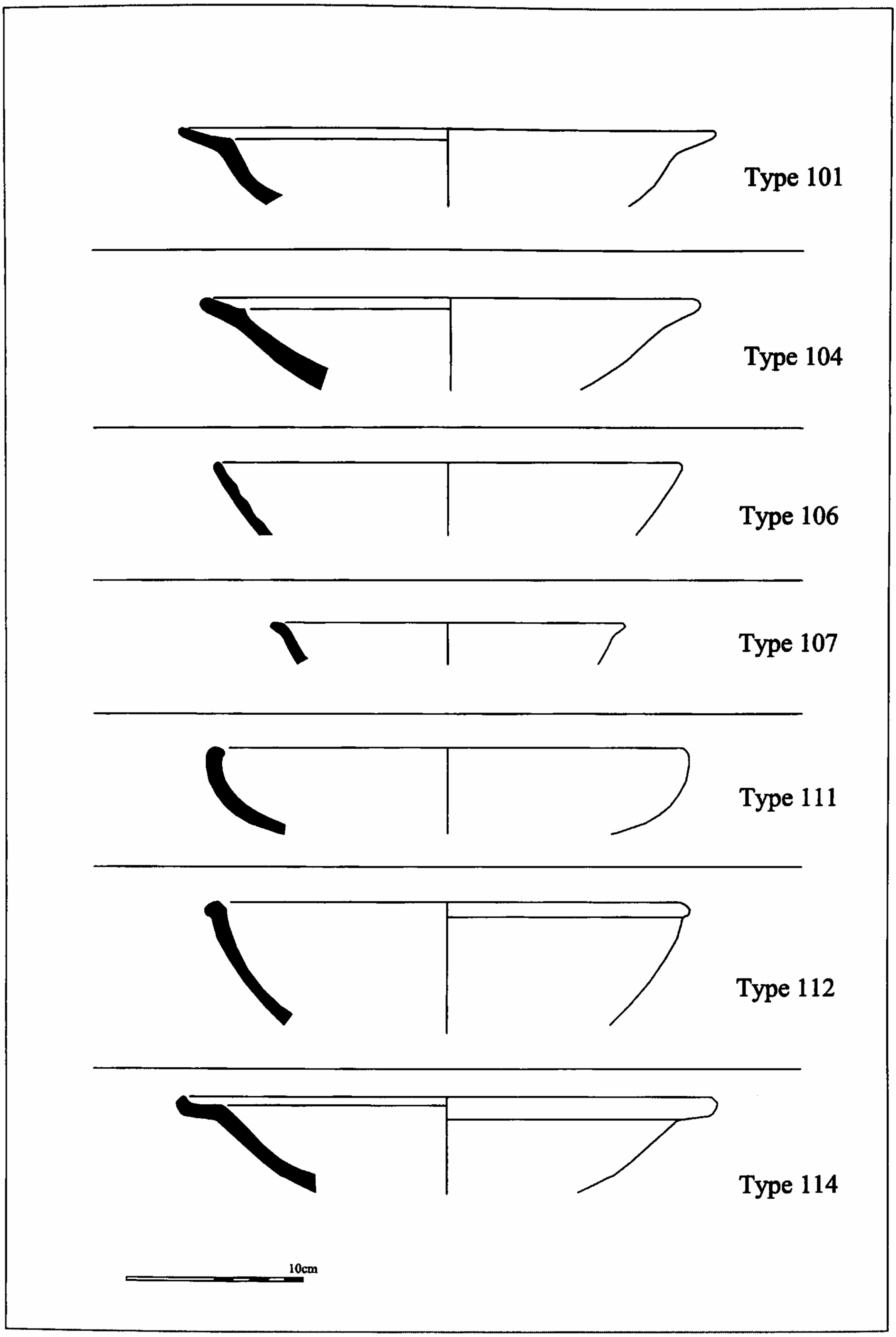


Fig. 11: al-Mataf glazed classes, types 101, 104, 106, 107, 111, 112, 114.

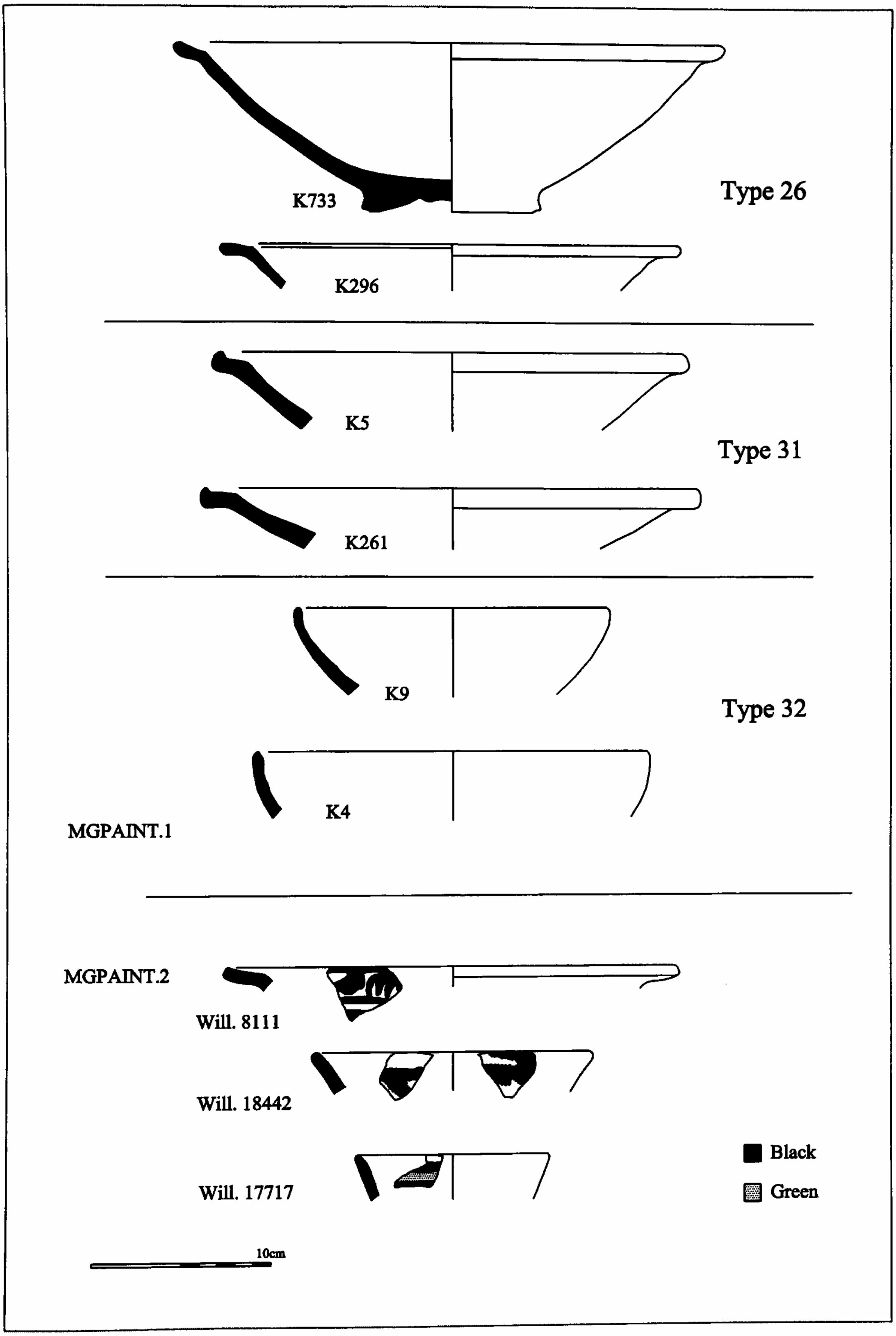


Fig. 12: MGPAINT.1 types 26, 31, 32 & examples of MGPAINT.2 from the Williamson Collection.

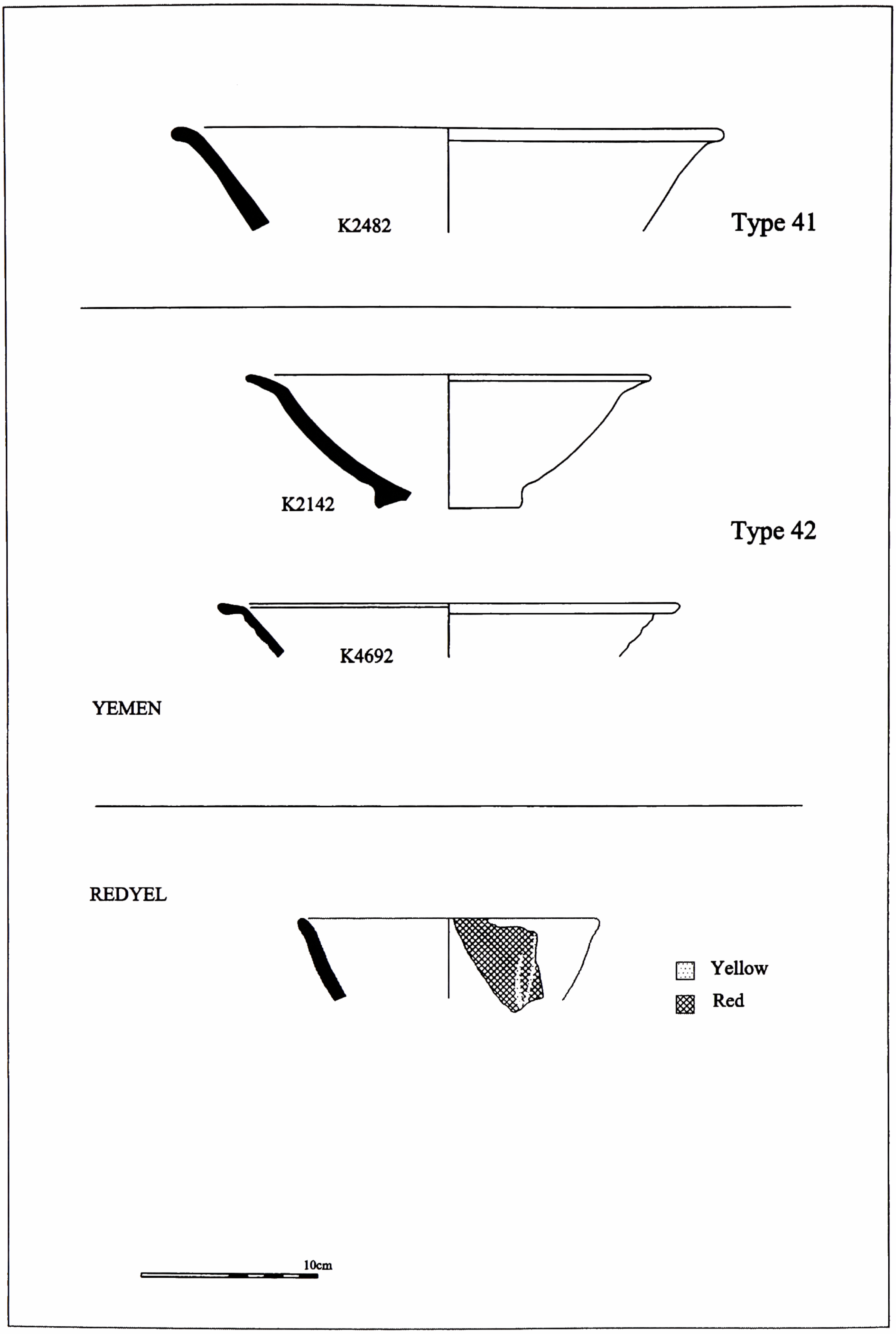


Fig. 13: YEMEN types 41, 42(above), REDYEL(above).

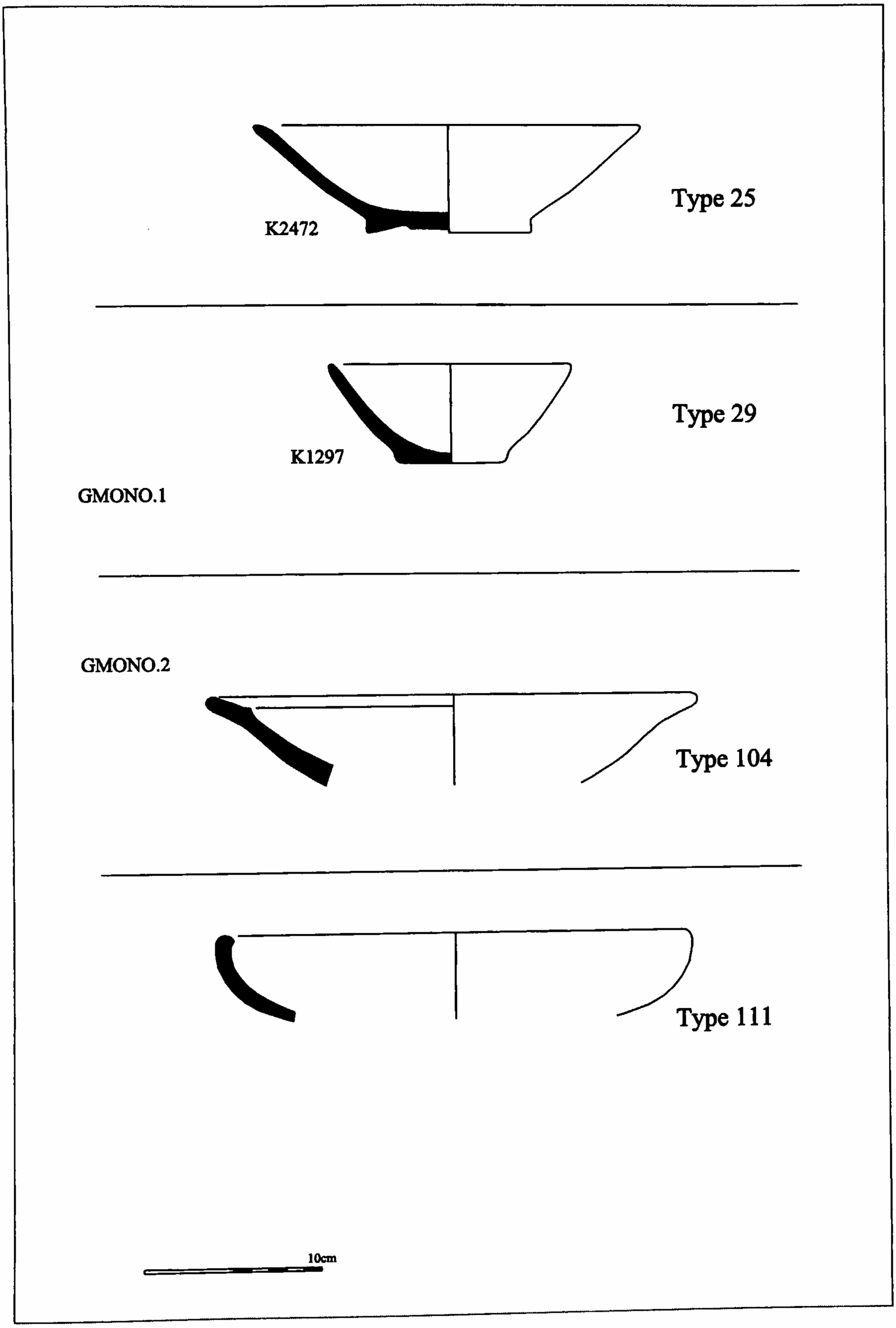


Fig. 14: GMONO.1 types 25, 29, and GMONO.2 types 104, 111.

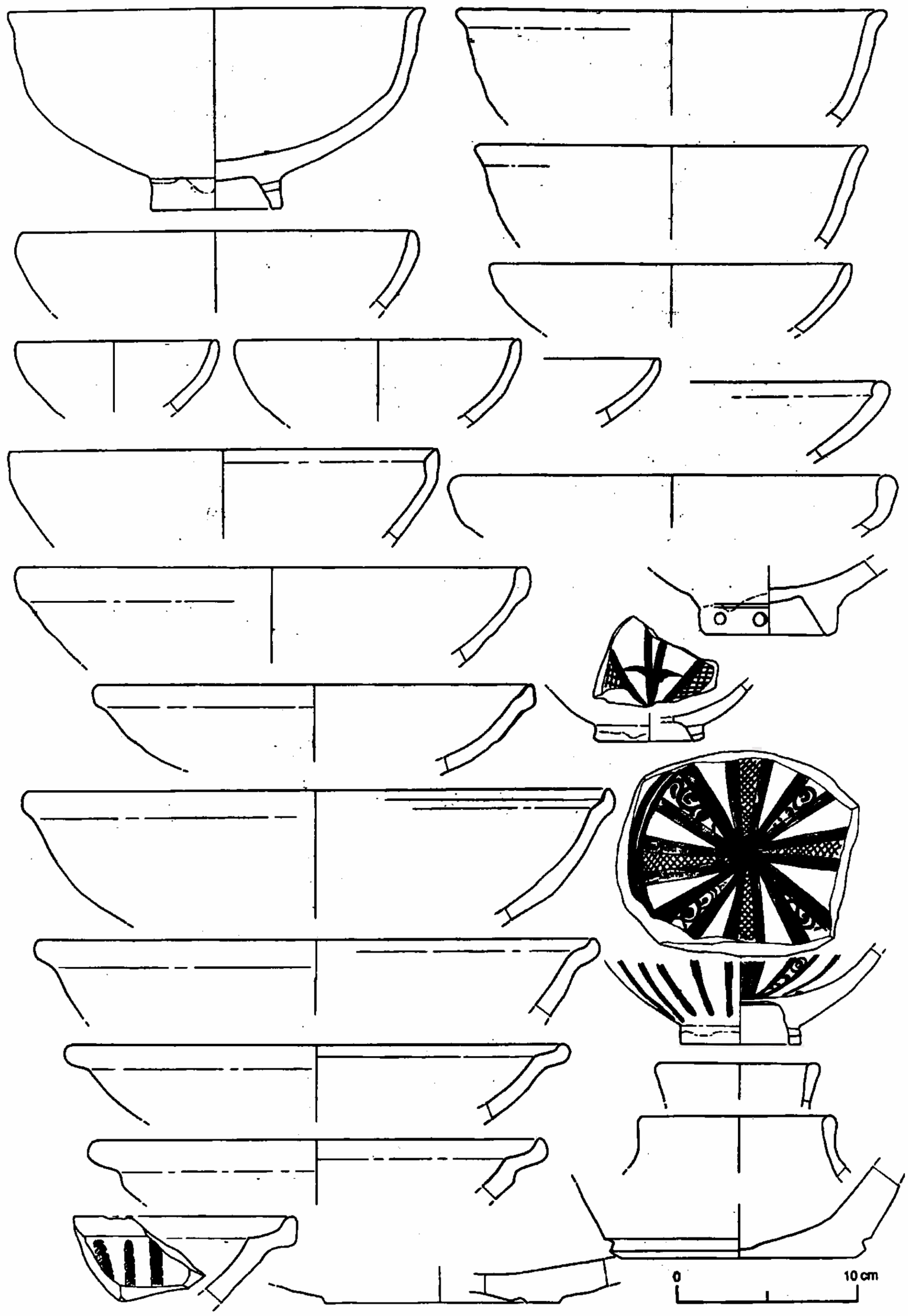


Fig. 15: UNDERGL forms and decoration from al-Mataf (from Sasaki 1991: fig. 2).

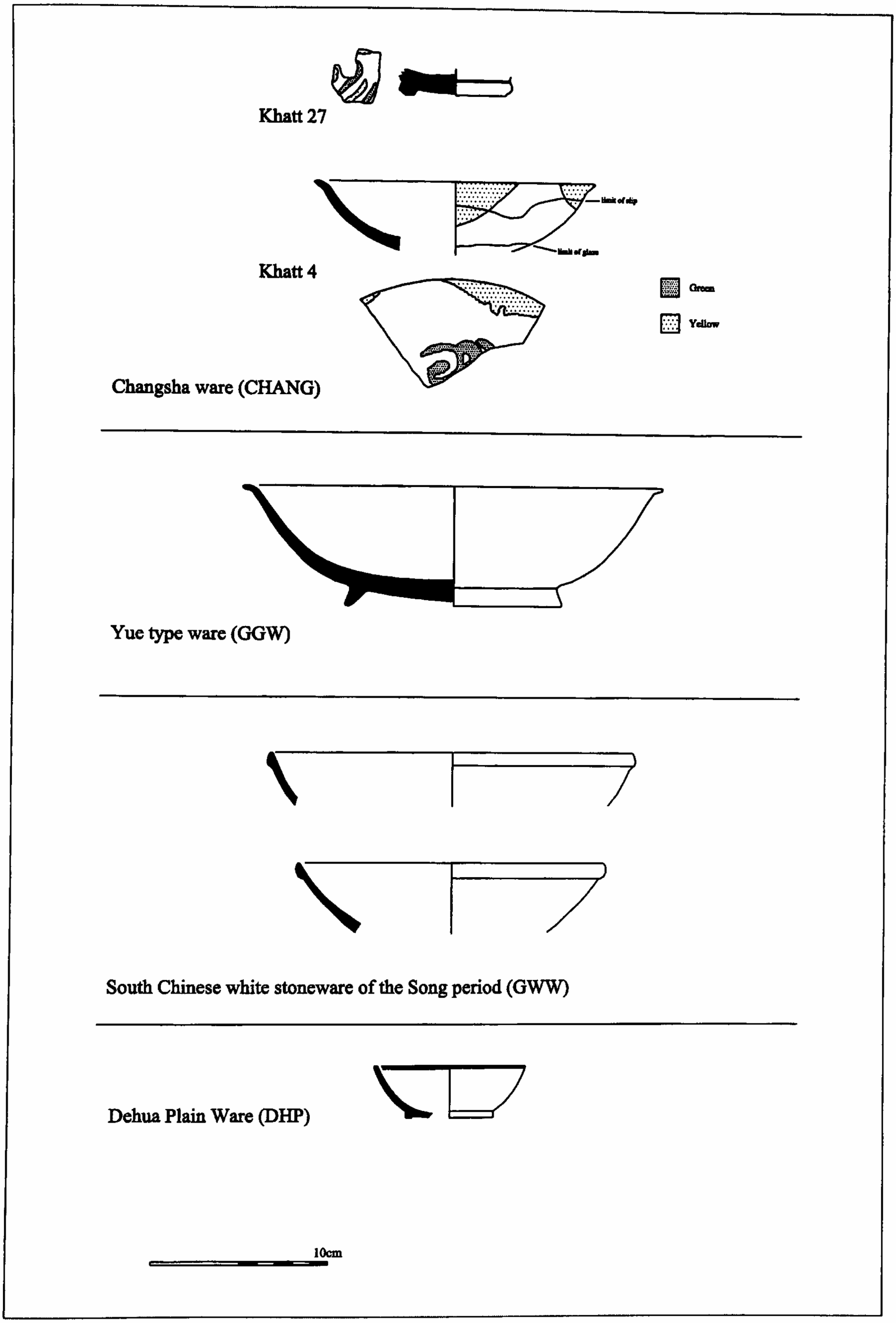


Fig. 16: Changsha (CHANG) sherds from Khatt, Yue-type wares (GGW), South Chinese White Stoneware (GWW) and Dehua Plain Ware (DHP) from Kush.

Fig. 17: Dehua moulded ware (DHM).

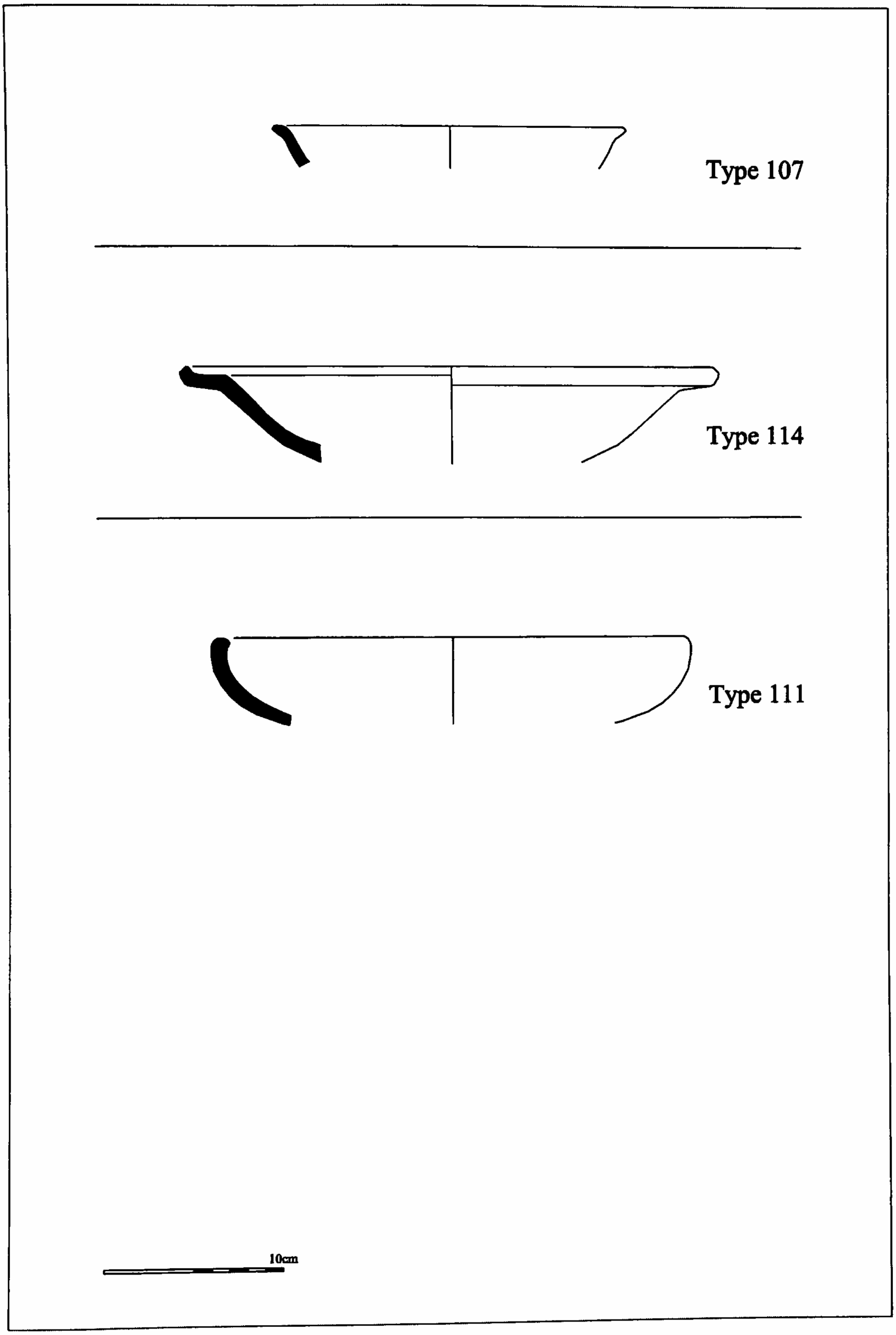


Fig. 18: Longquan and other celadons (LQC, SCHINA) types107, 111, 114.

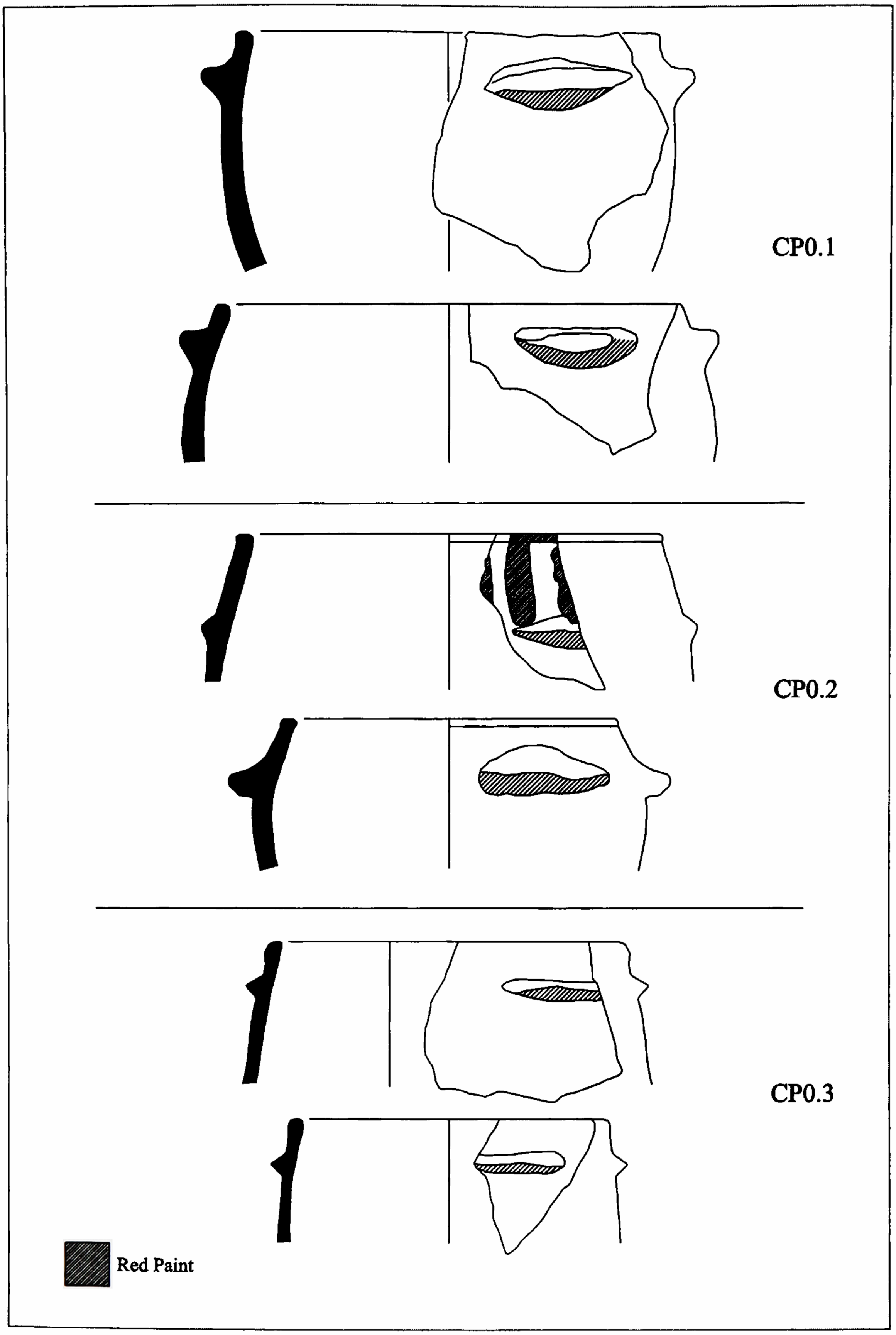


Fig. 19: Julfar ware cooking pots from Kush.

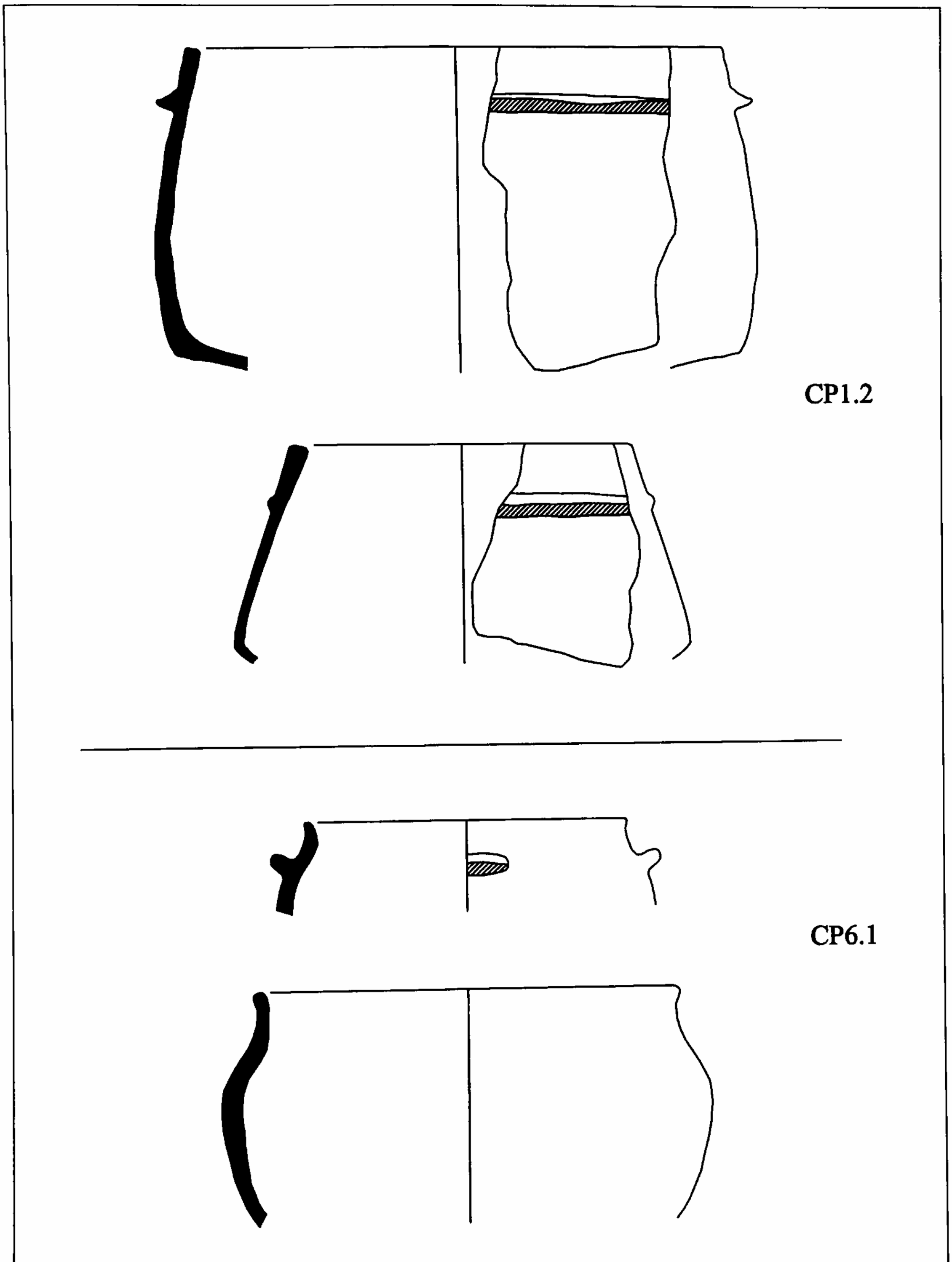


Fig. 20: Julfar ware cooking pots from Kush.

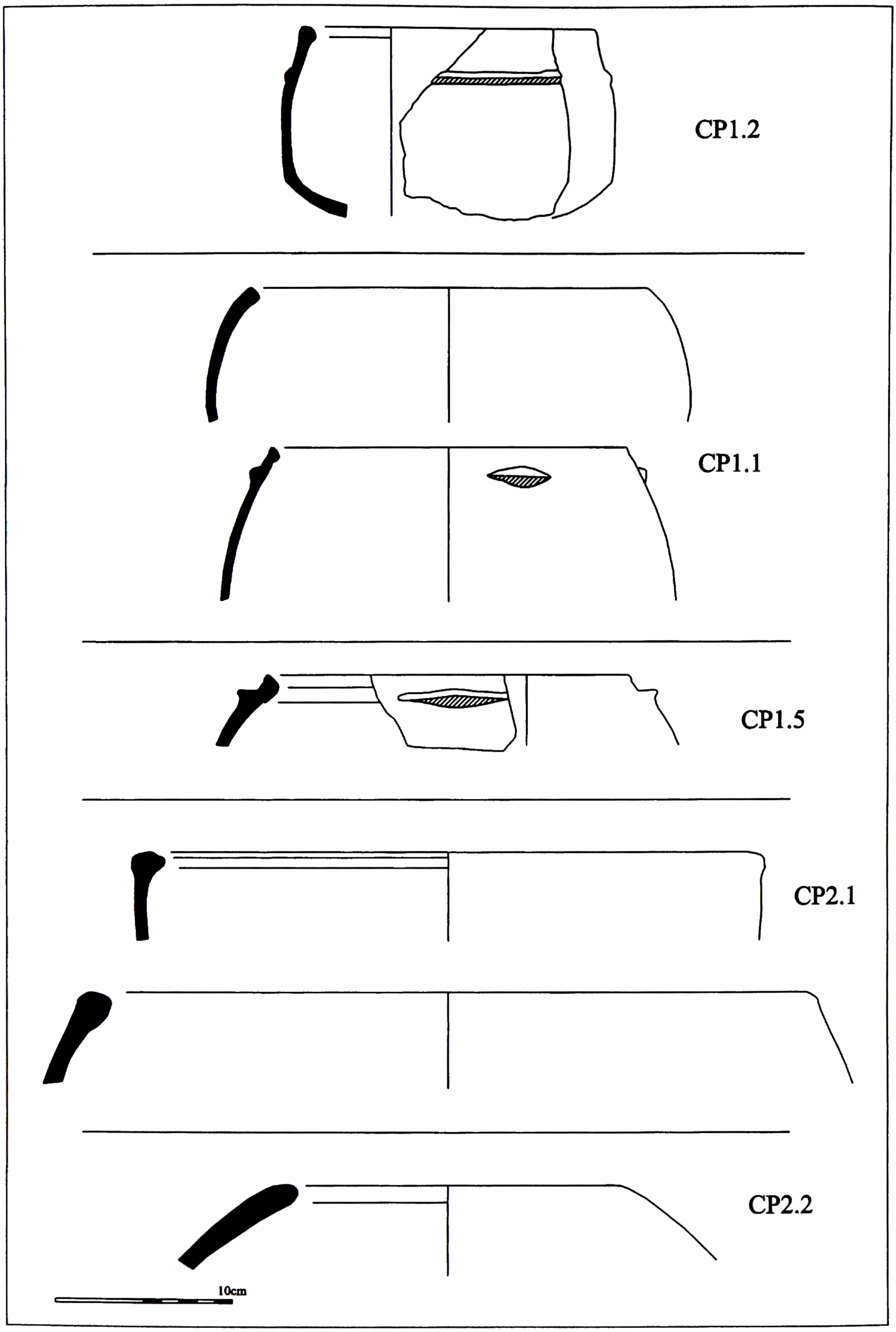


Fig. 21: Julfar ware cooking pots from al-Mataf.

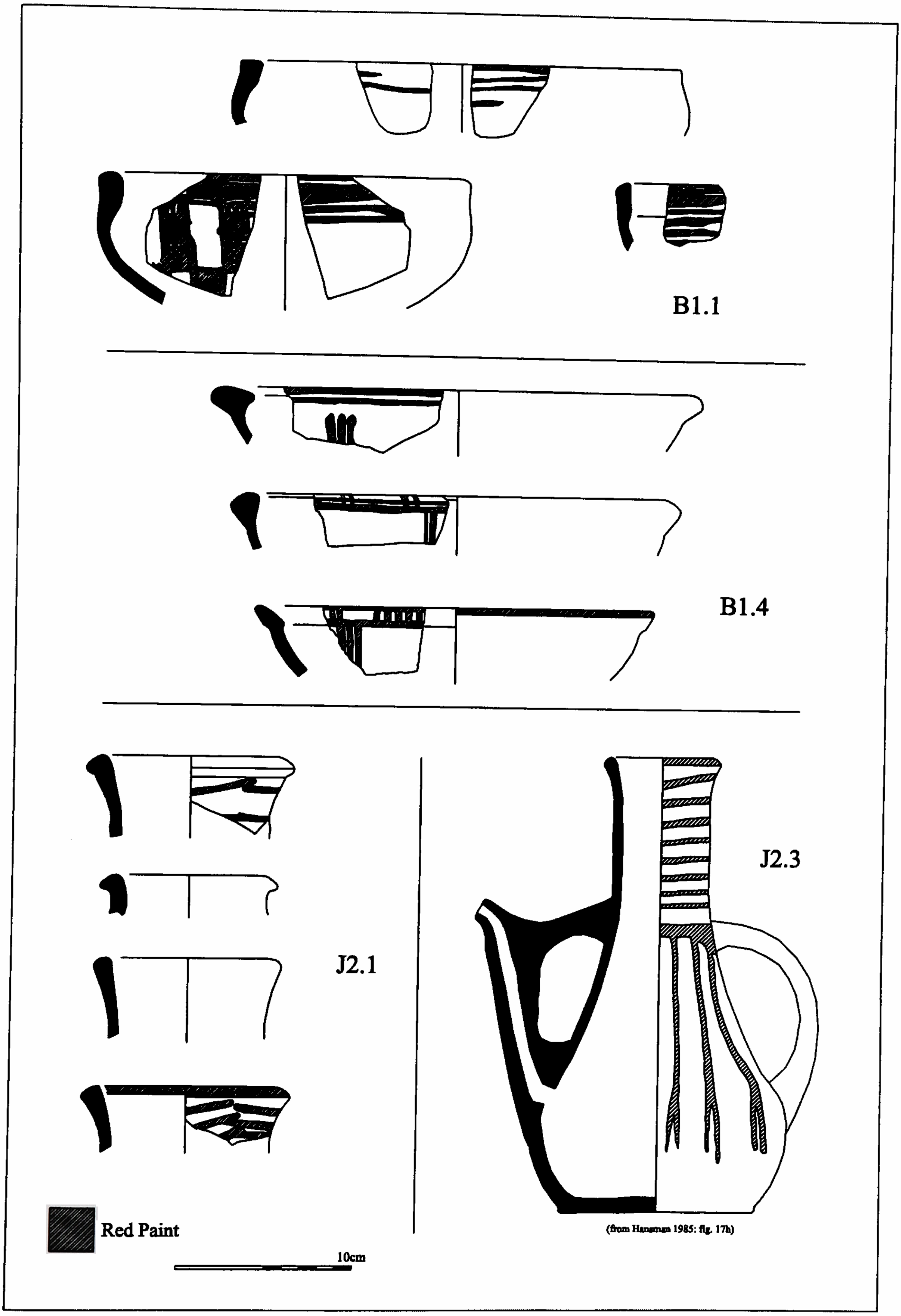


Fig. 22: Julfar ware bowls and jars from al-Mataf.

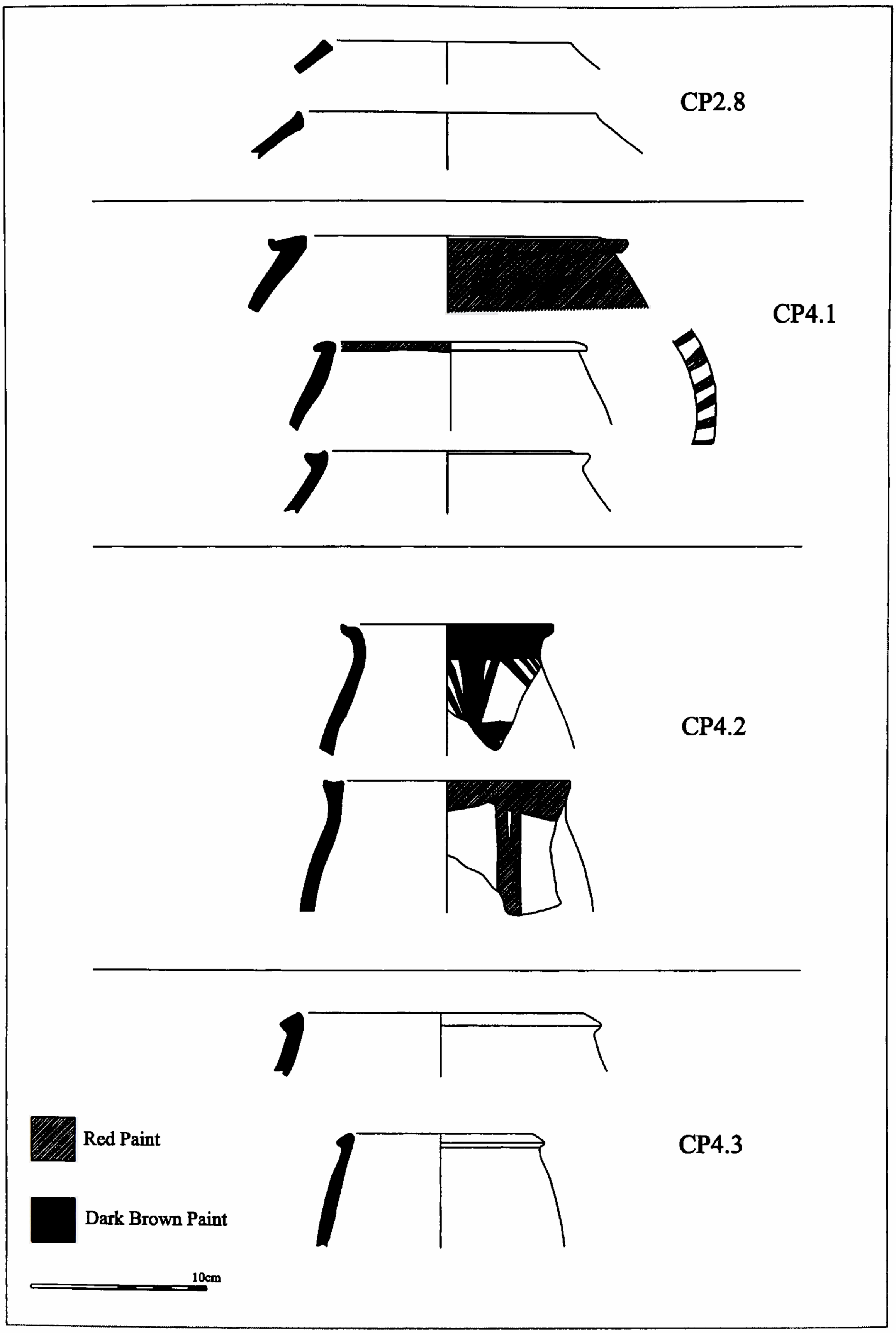


Fig. 23: Julfar ware post-al-Mataf cooking pots.

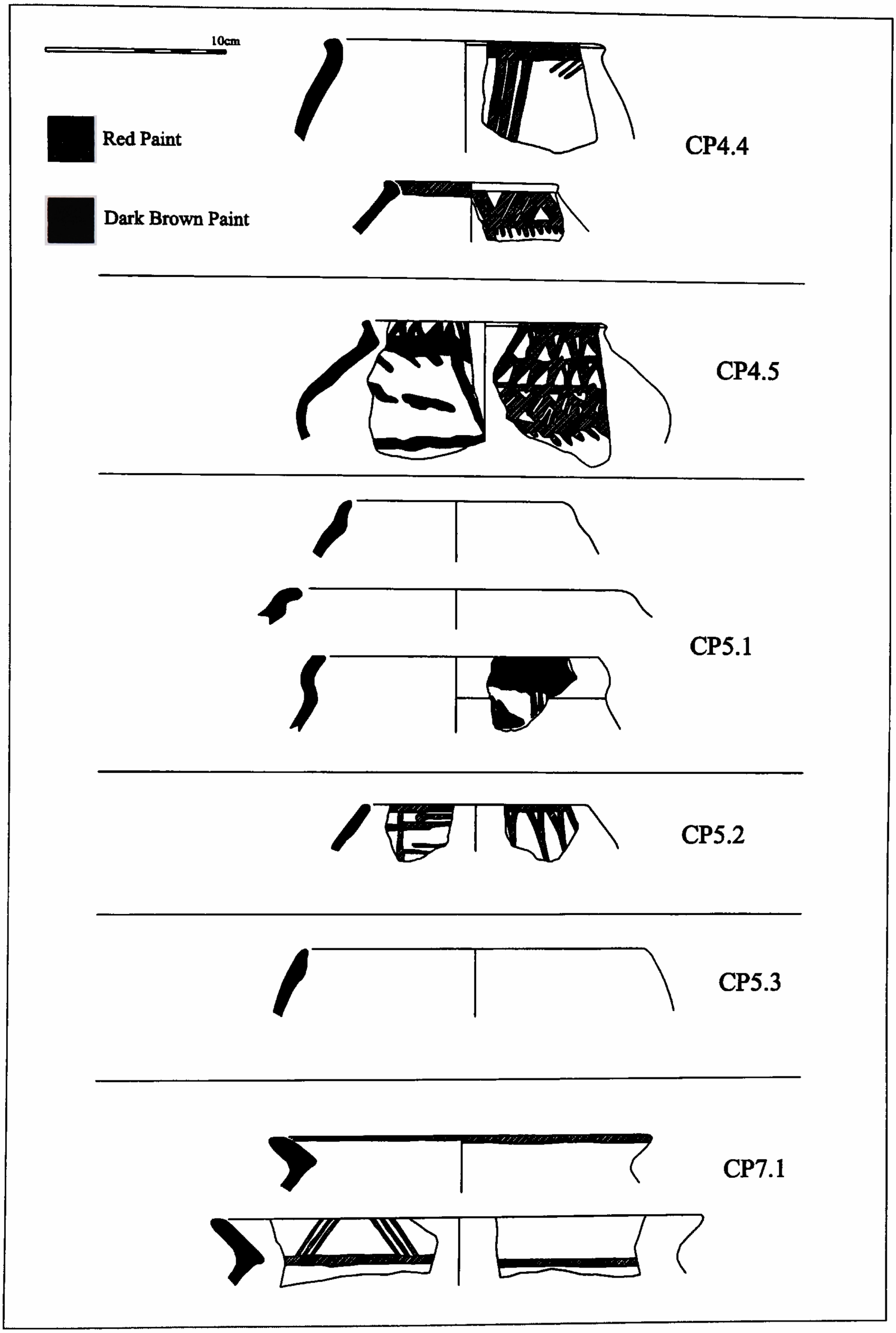


Fig. 24: Julfar ware post-al-Mataf cooking pots.

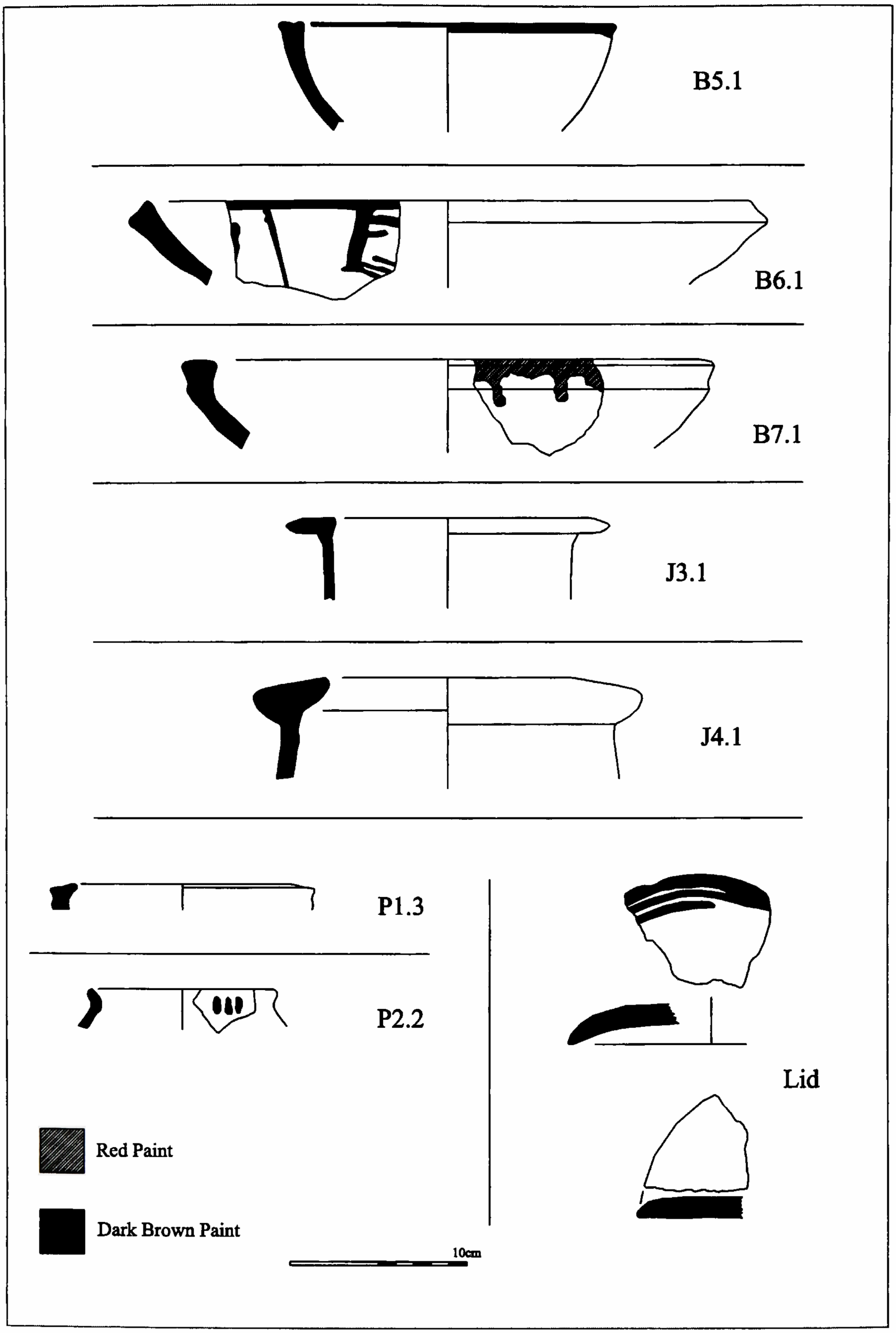


Fig. 25: Julfar ware post-al-Mataf bowls, jars and other types.

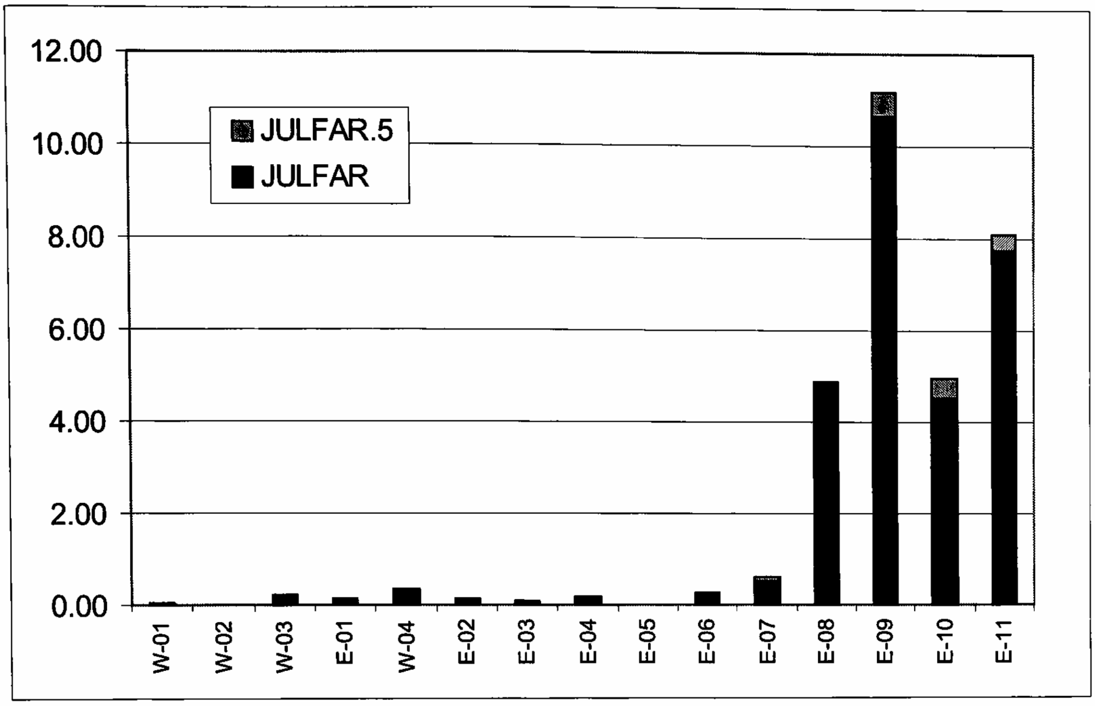


Fig. 26: Occurrence of Julfar ware through the Kush sequence (as % of total assemblage by sherd count).

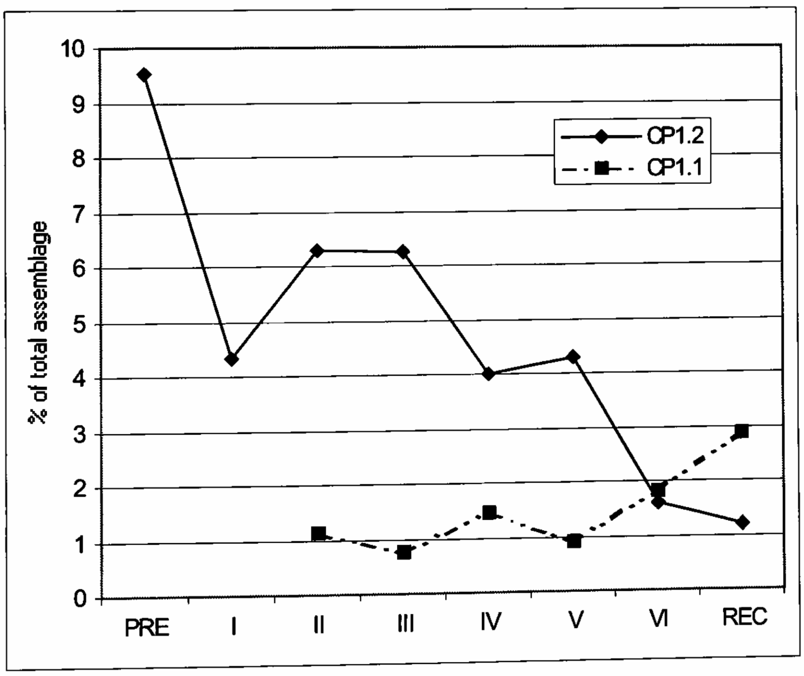


Fig. 27: The decline of CP2.1 rim sherds and the increase of CP1.1 rim sherds as a percentage of the total al-Mataf assemblage (both areas).

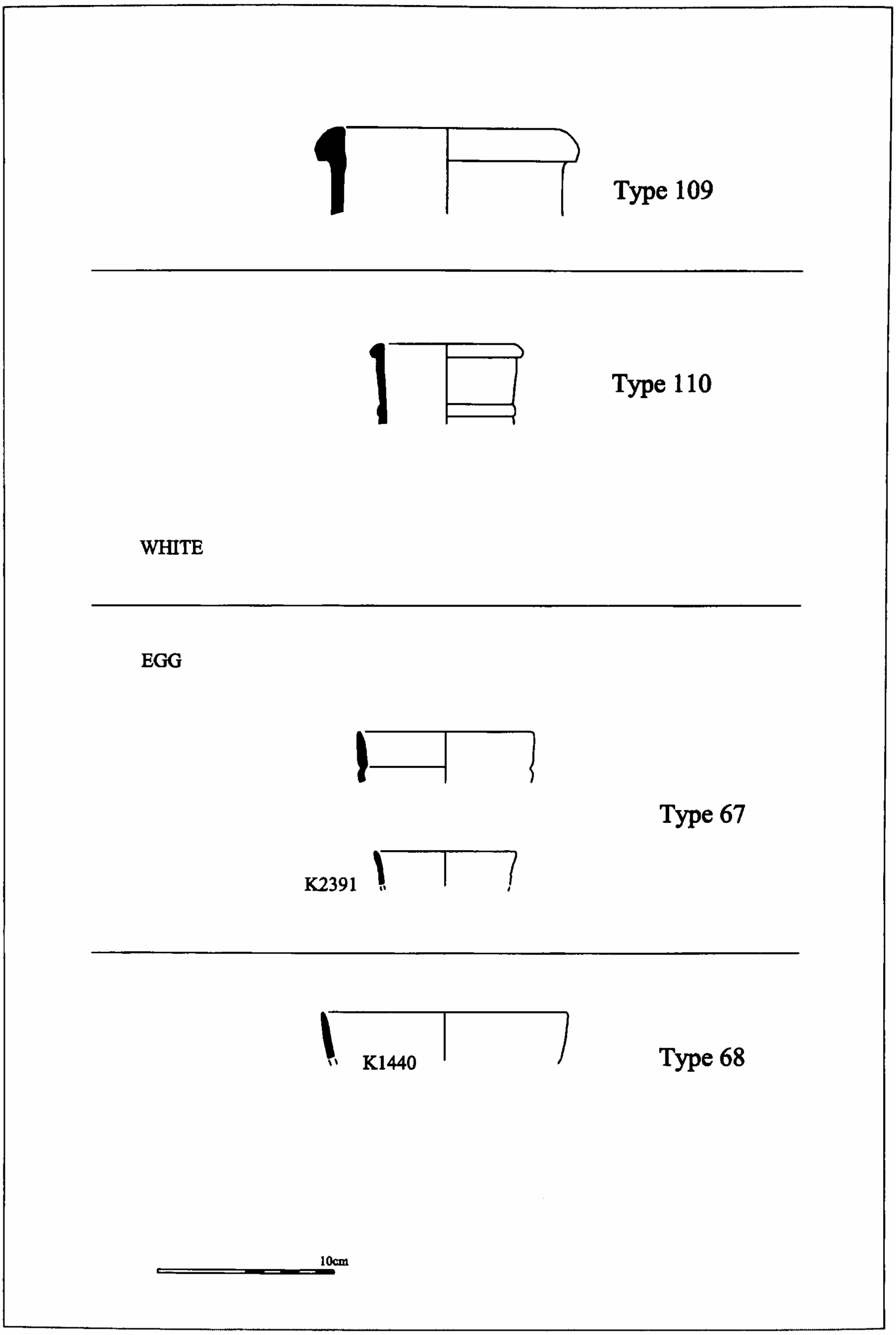


Fig. 28: White ware (WHITE) types 109, 110 and Eggshell ware (EGG) types 67, 68.

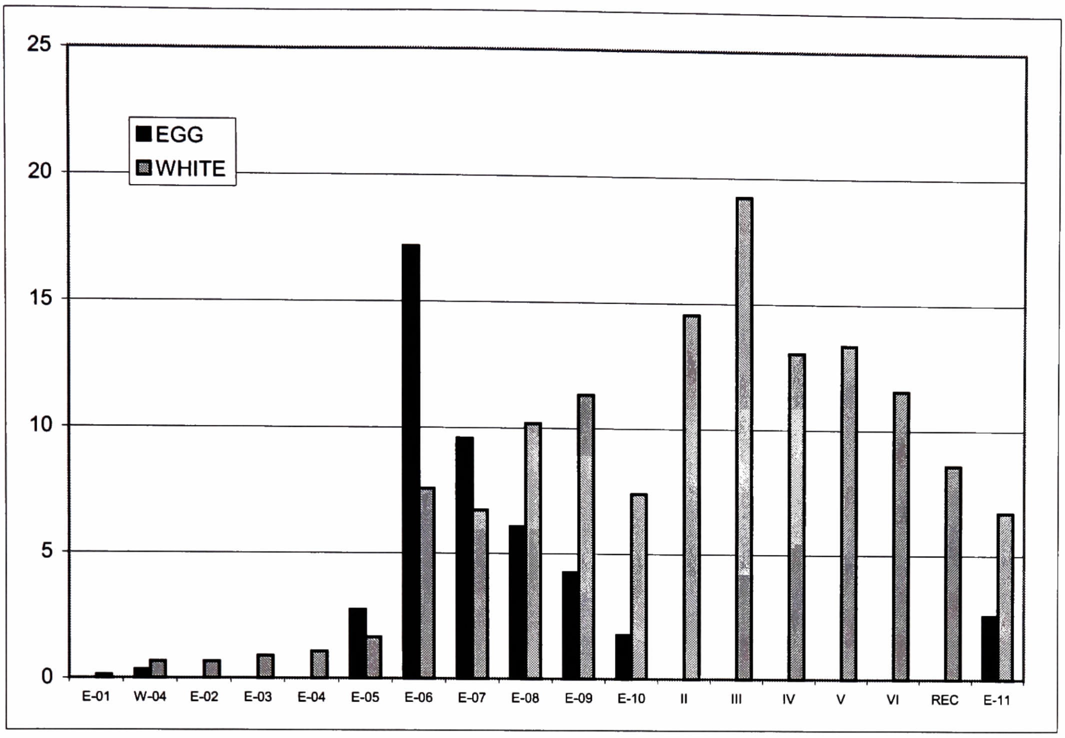


Fig. 29: EGG and WHITE through the Kush and al-Mataf sequences (% of total sherd count by Phase).

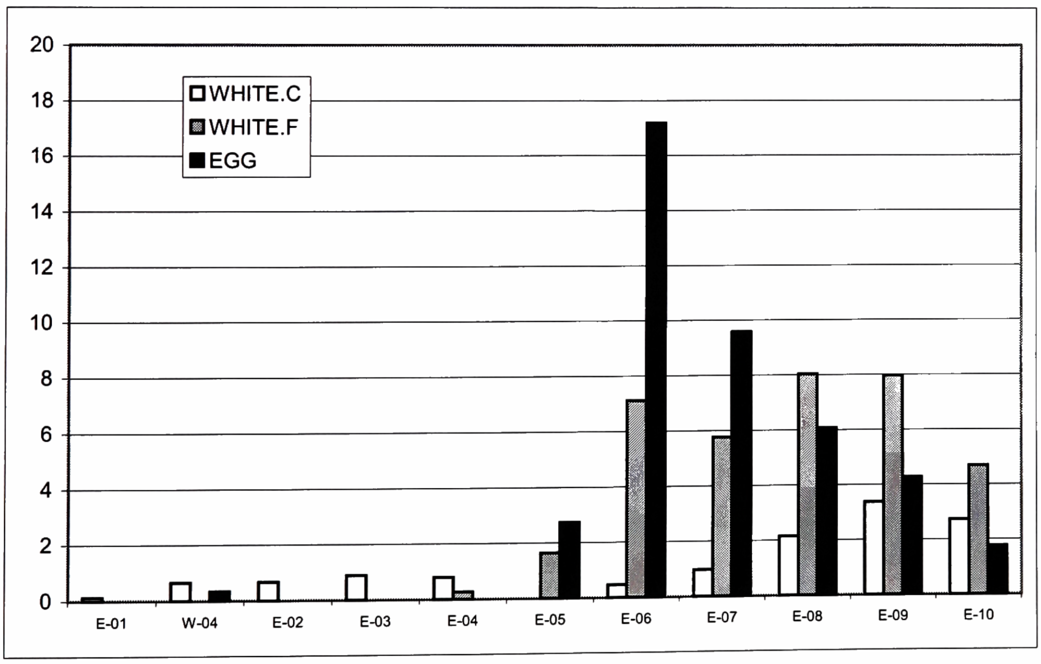


Fig. 30: WHITE.C, WHITE.F and EGG through the Kush sequence (% of total assemblage by sherd count).

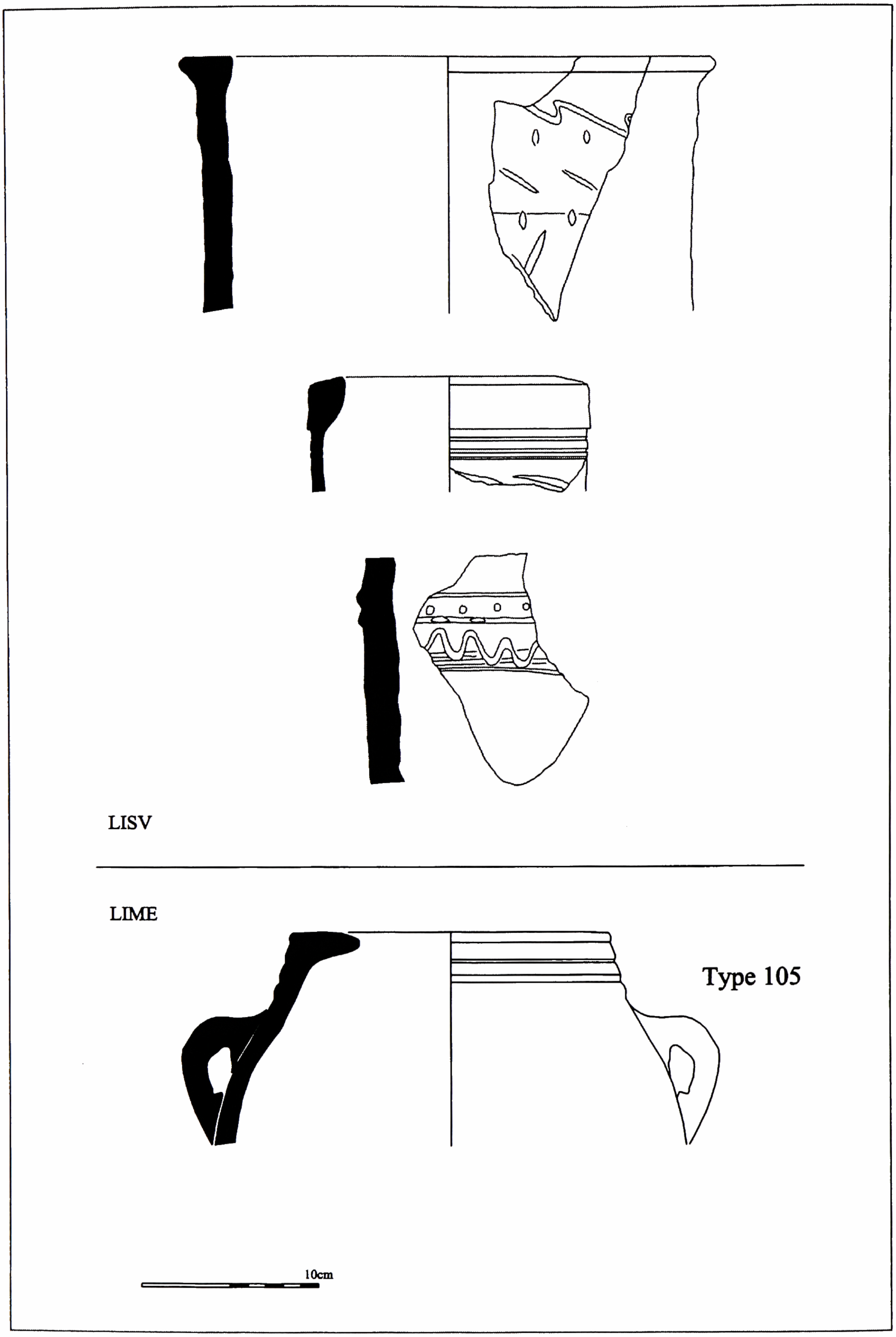


Fig. 31: Examples of Large Incised Storage Vessels (LISV) and LIME type 105.

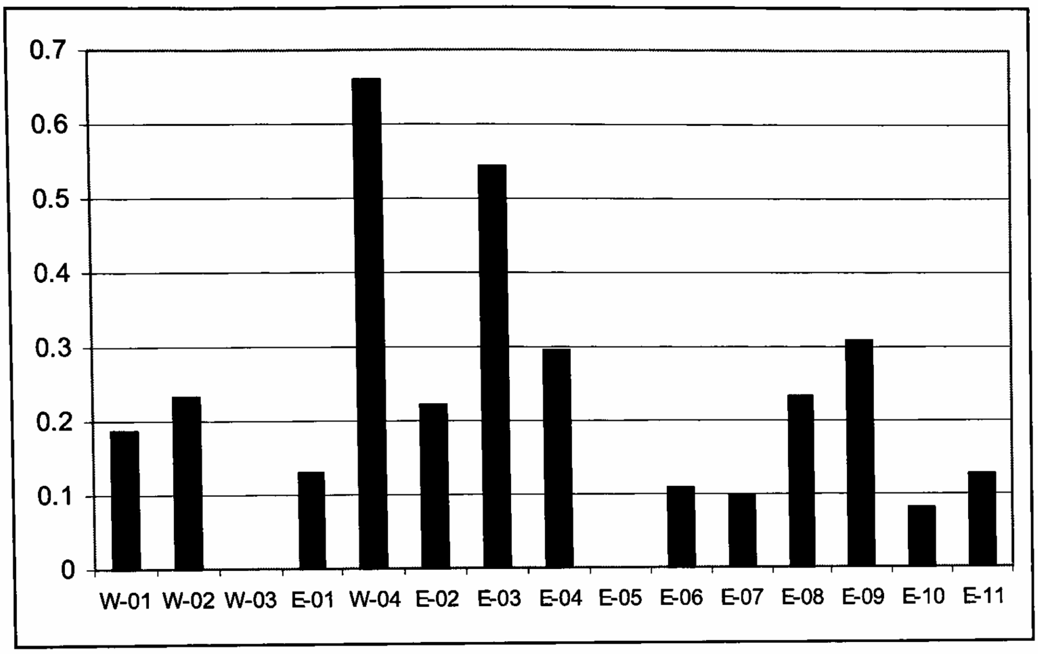


Fig. 32: Proportion of LISV through the Kush sequence (diagnostic sherd count as a % of total assemblage).

Fig. 33: Honeycomb ware sherd from Kush.

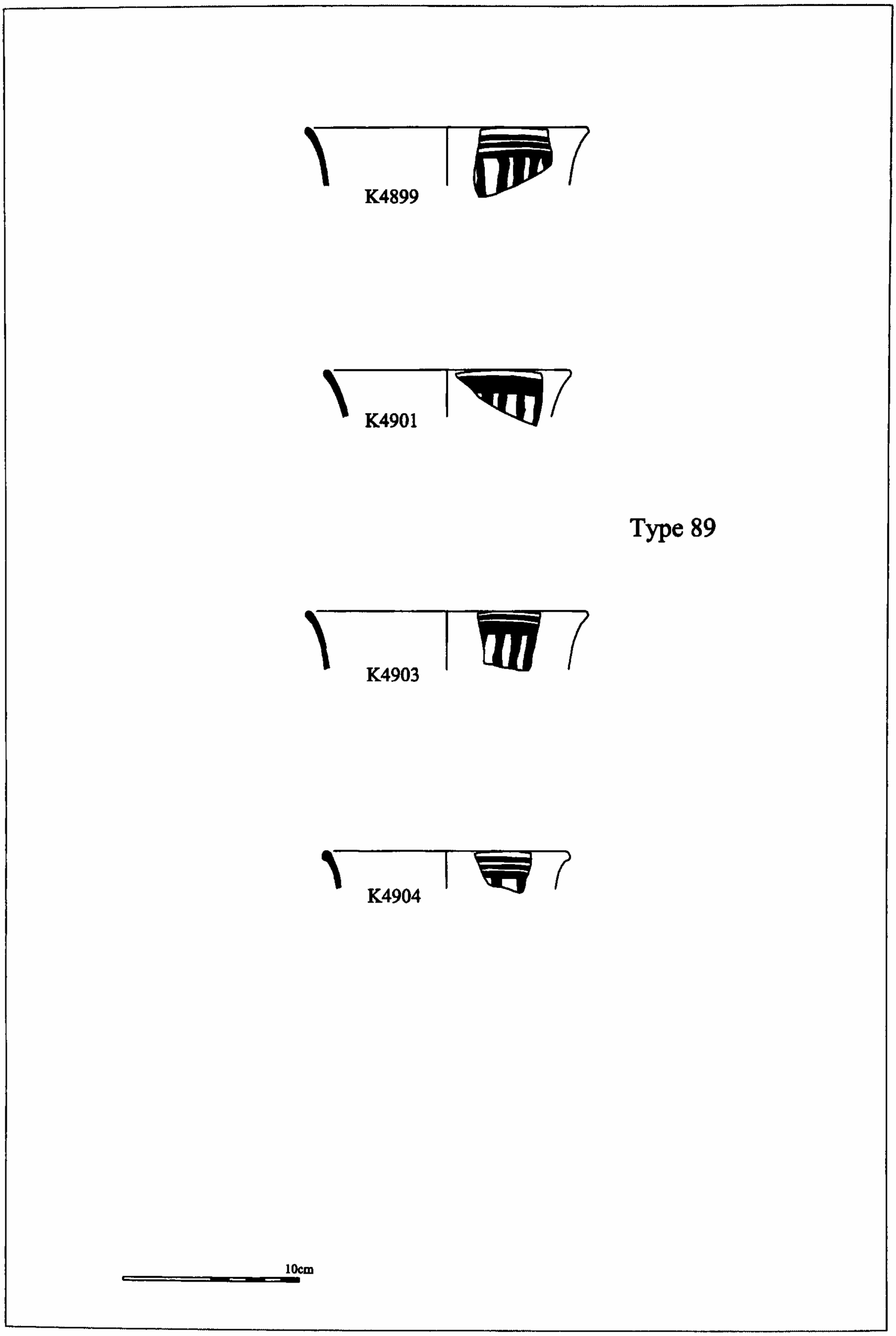


Fig. 34: Fine Orange Painted Ware (FOPW).

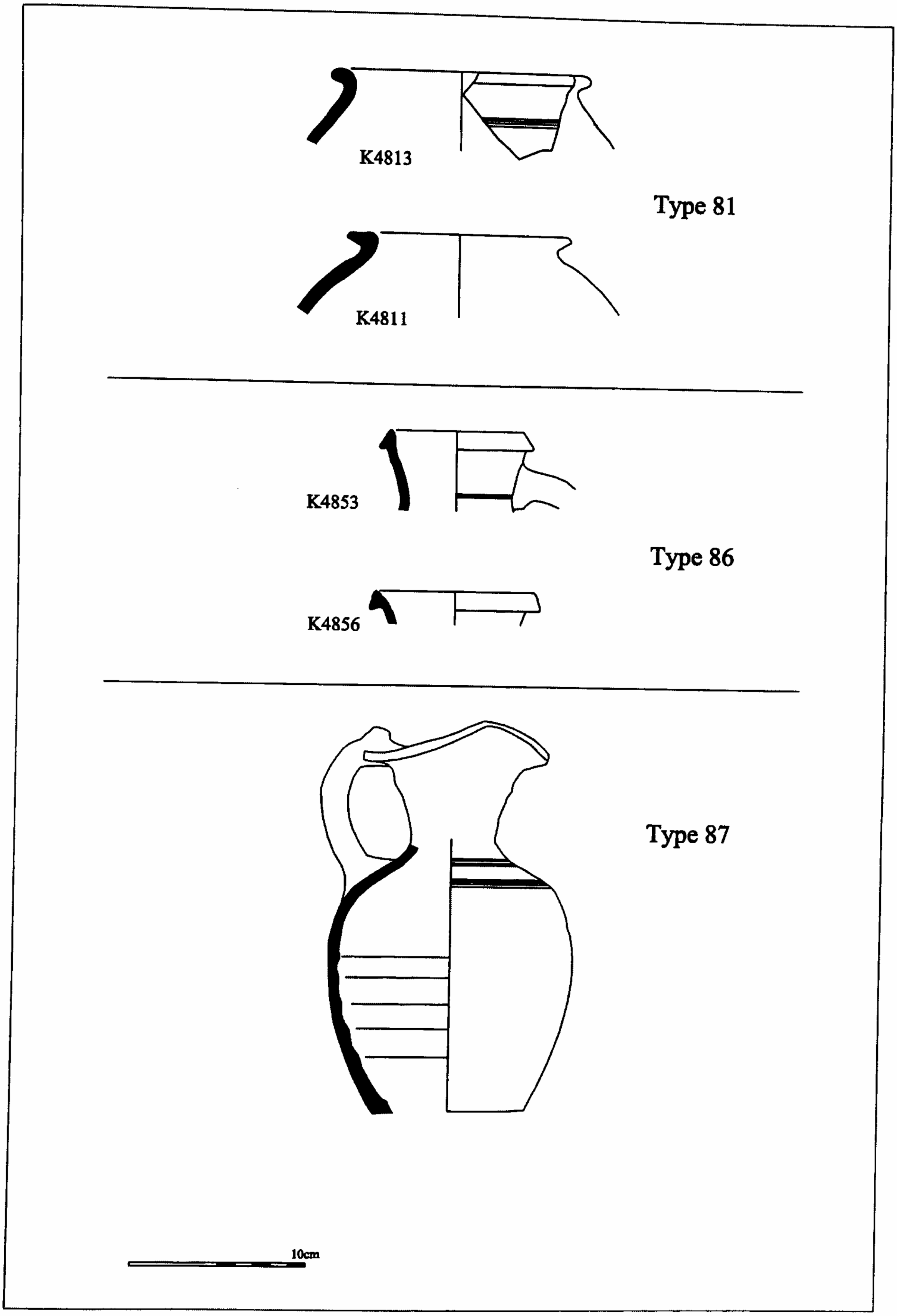


Fig. 35: CLINKY types 81, 86 and 87.

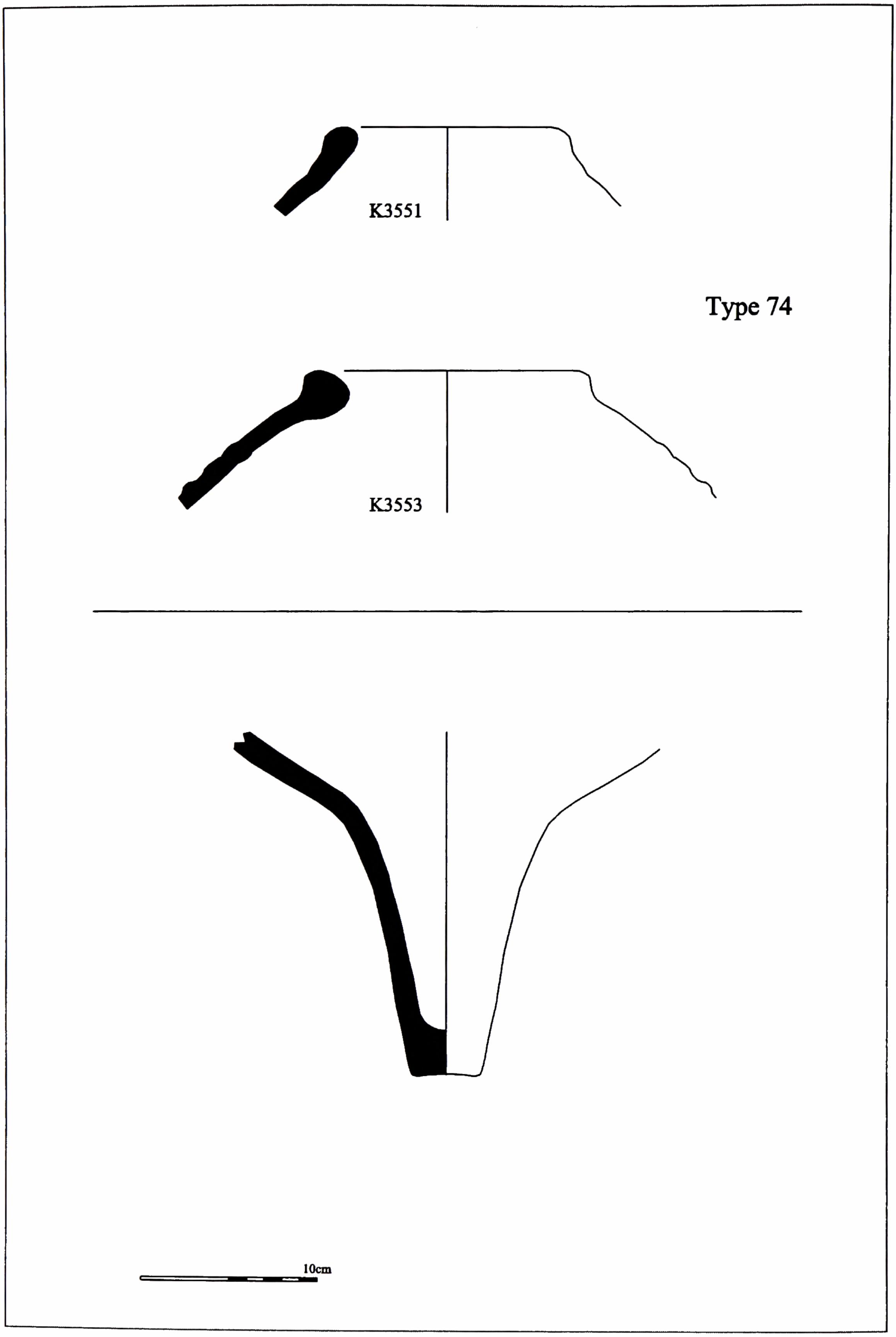


Fig. 36: Torpedo jar type 74 and base.

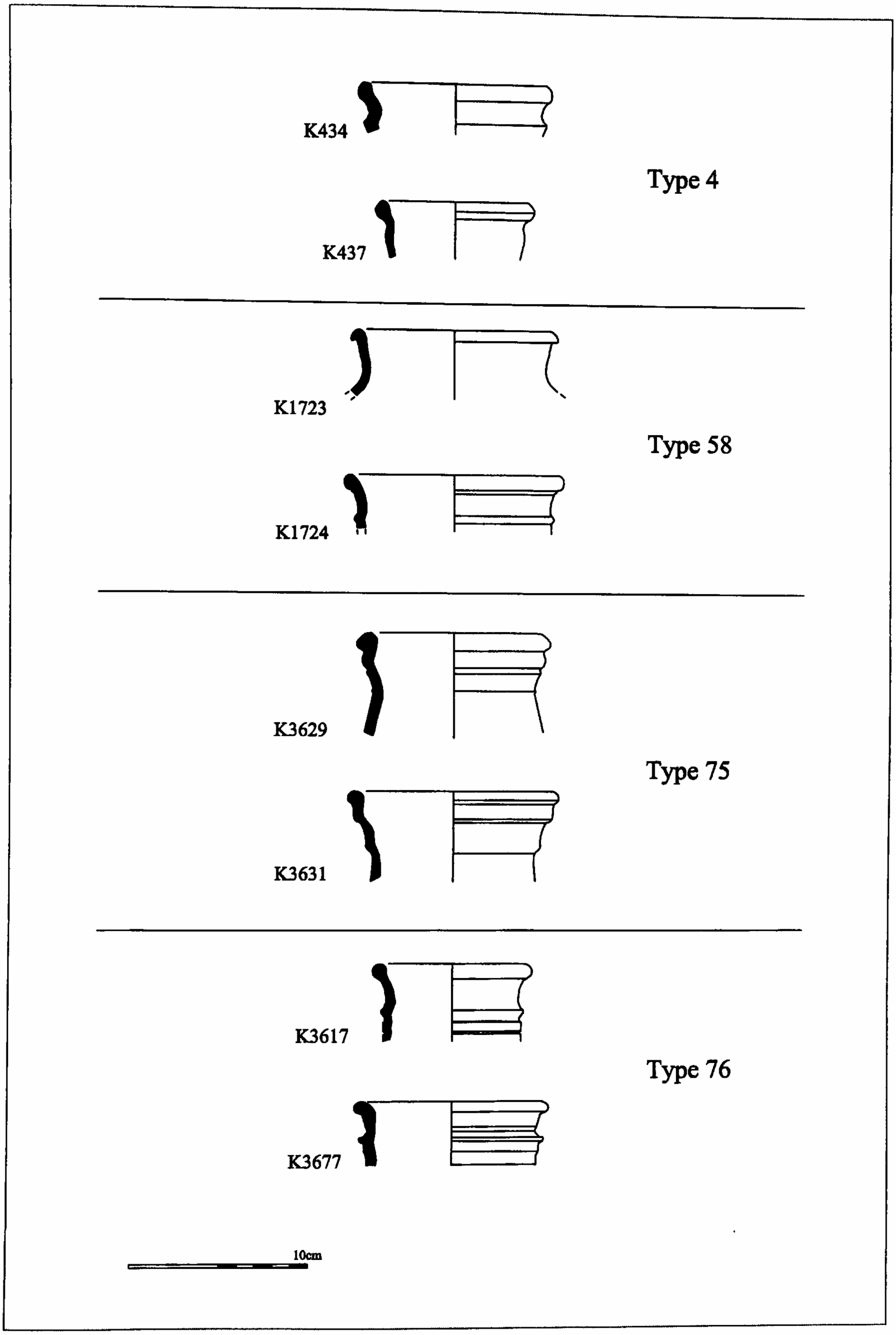


Fig. 37: SMAG types 4, 58, 75, 76.

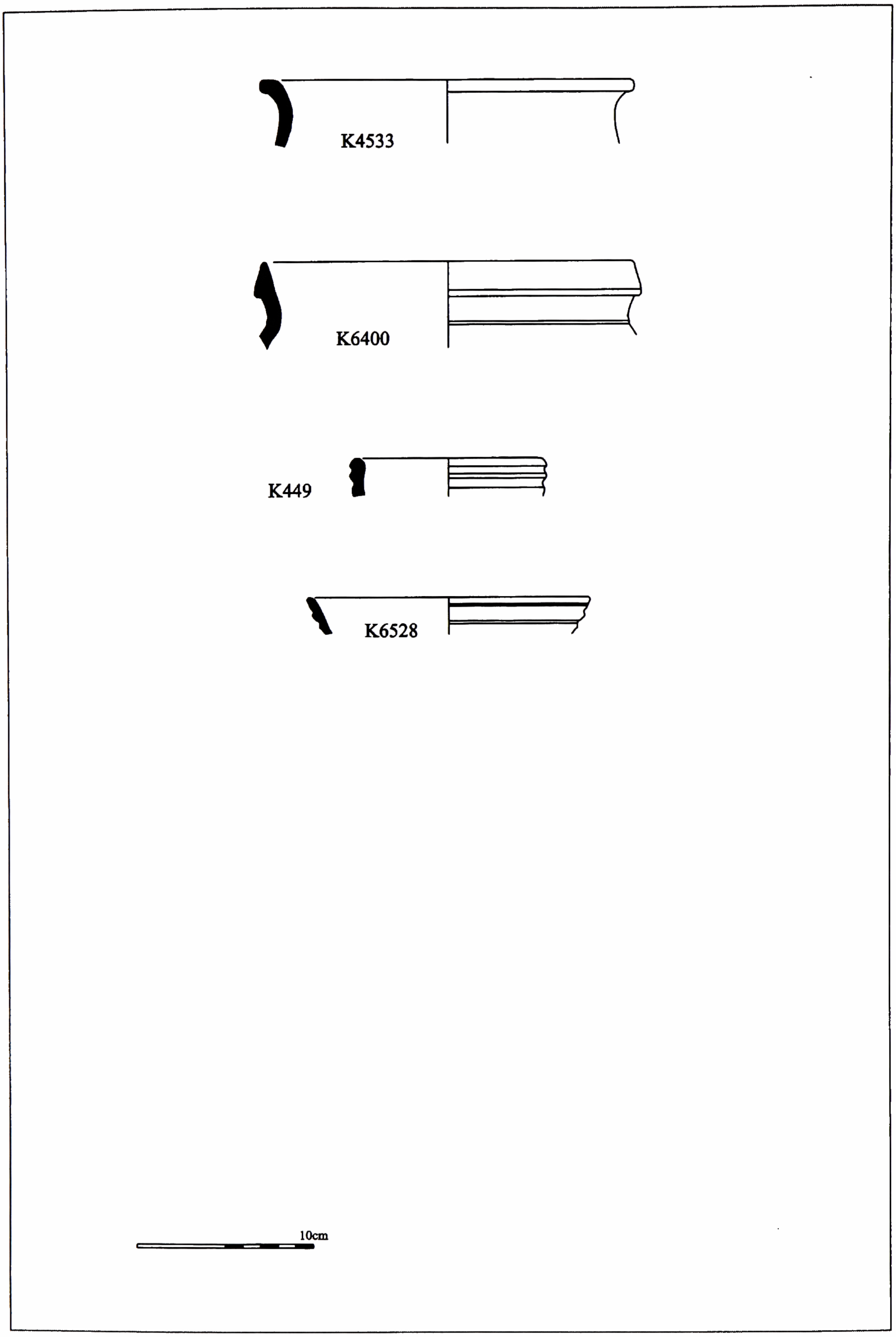


Fig. 38: SPOT.

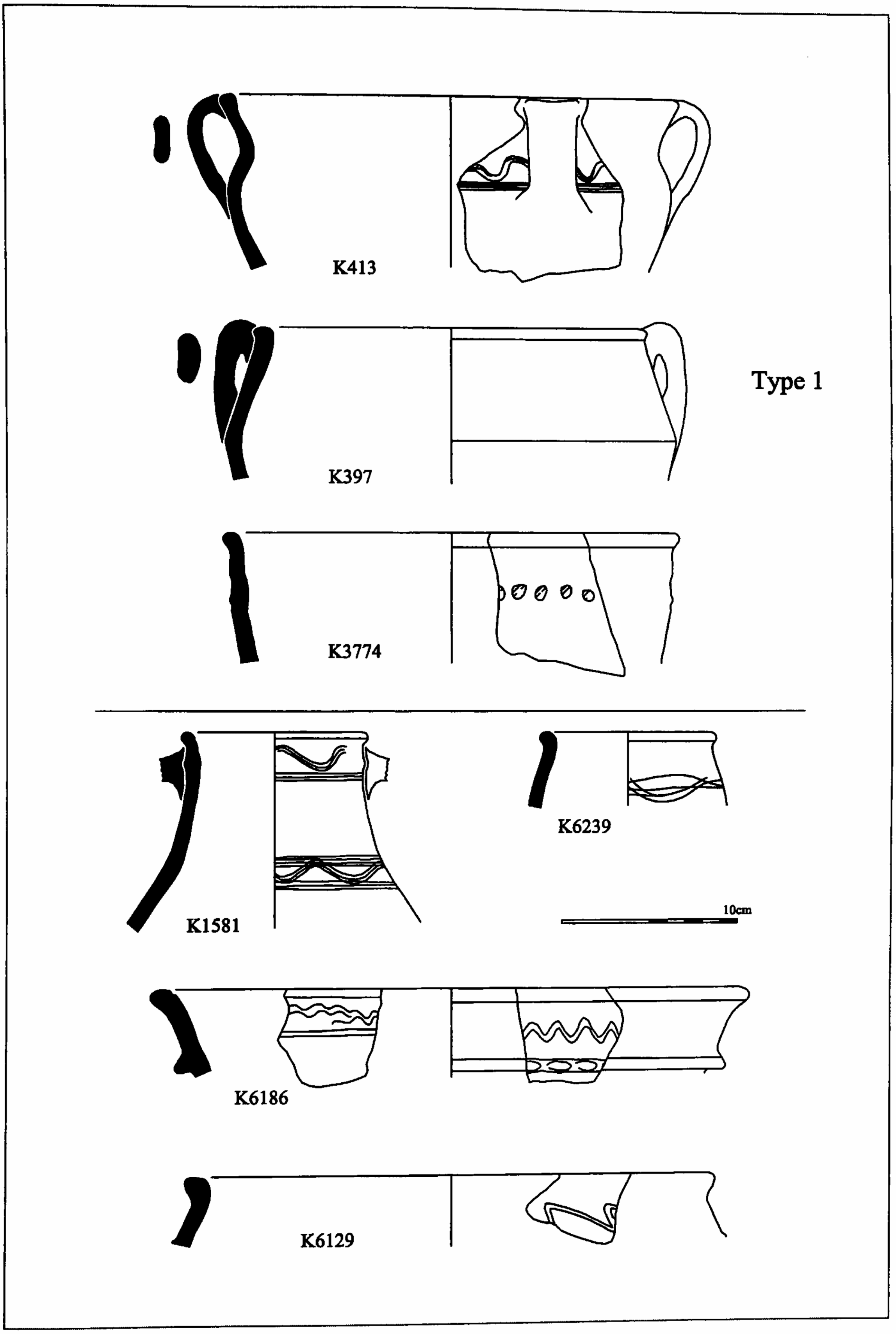


Fig. 39: WAPO.

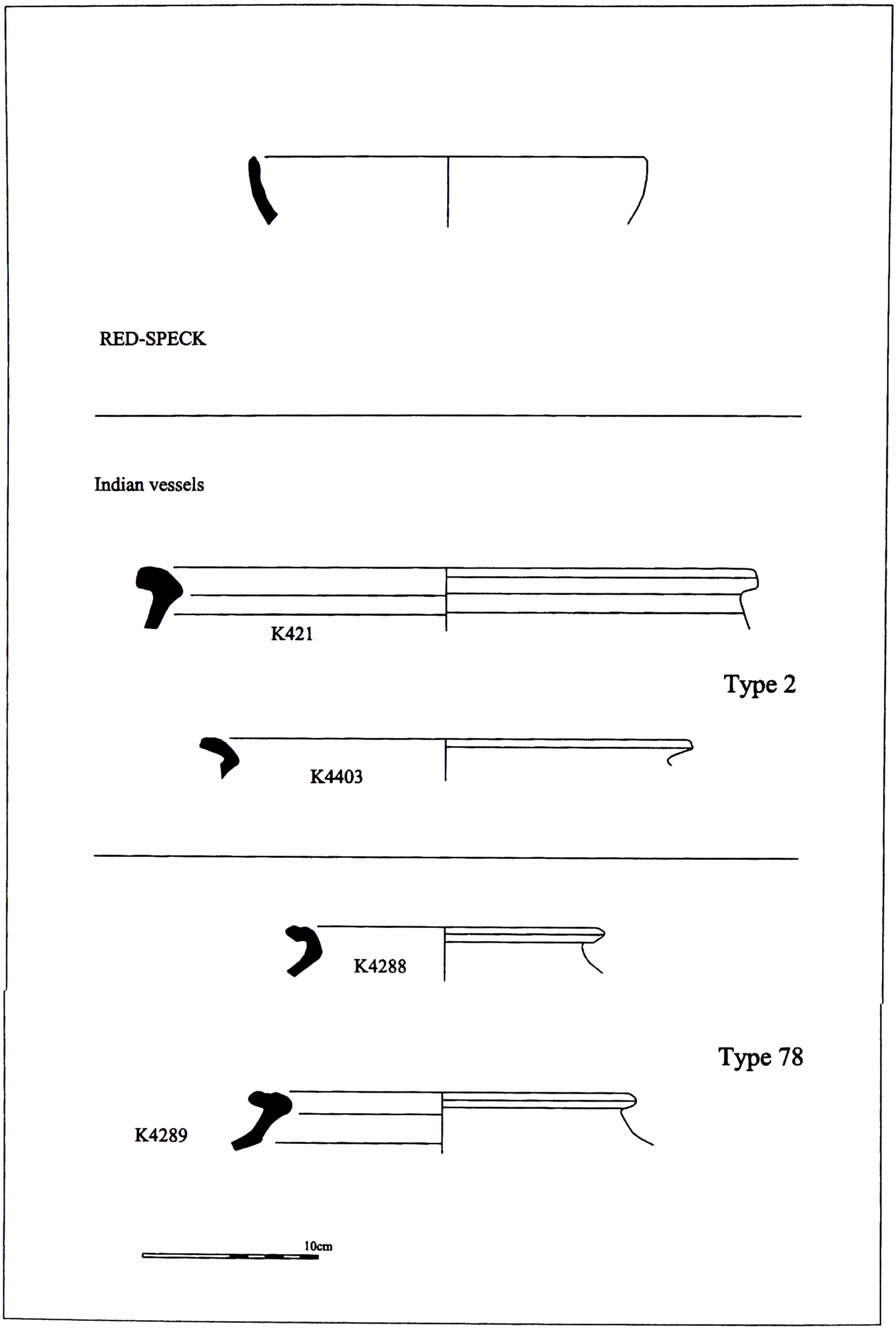


Fig. 40: RED-SPECK bowl and Indian vessels IRPW, SBBW, PAINT, and IRAB types 2, 78.

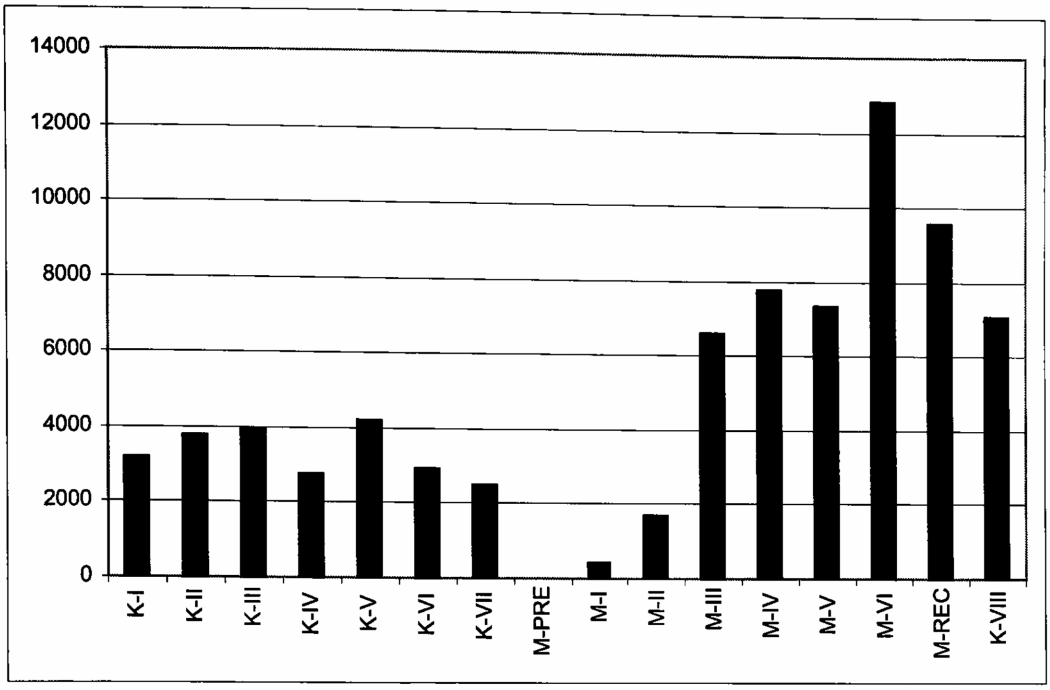


Fig. 41: The number of sherds from the Kush/ al-Mataf sequence by Period/Phase.

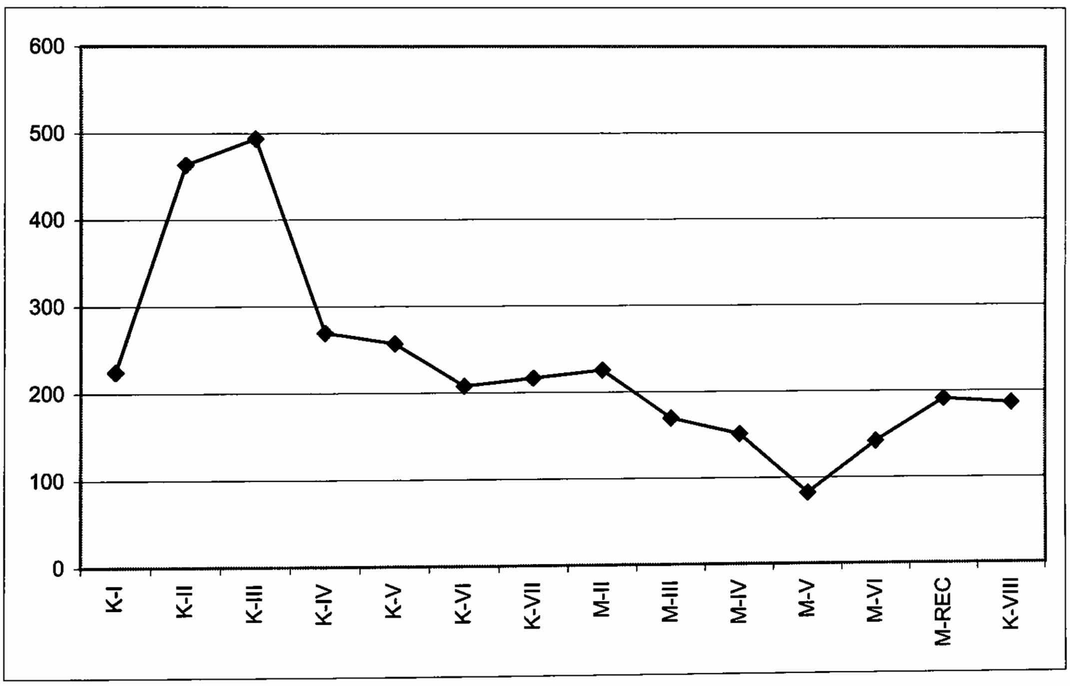


Fig. 42: Brokenness across the Kush and al-Mataf sequences. The al-Mataf totals are based on a sample of 1,646 sherds from 11 contexts across the sequence. The Kush totals are based on 100% measurement (brokenness = number of sherds/(EVE/100)).

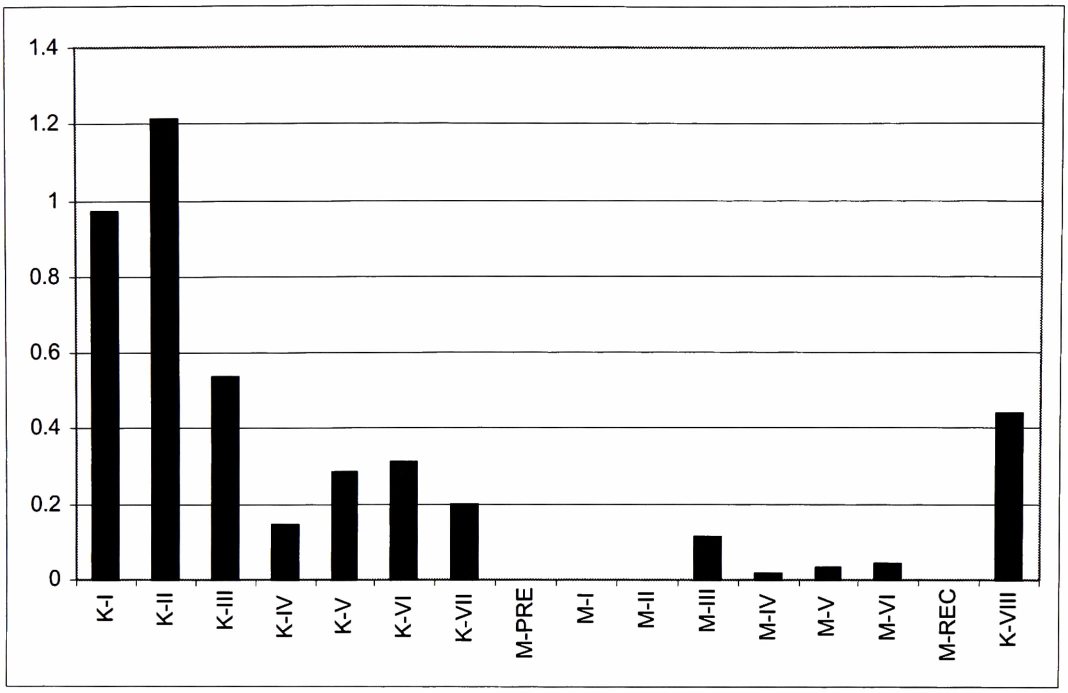


Fig. 43: Proportion of Indian sherds through the Kush/al-Mataf sequence (as % of total assemblage by sherd count).

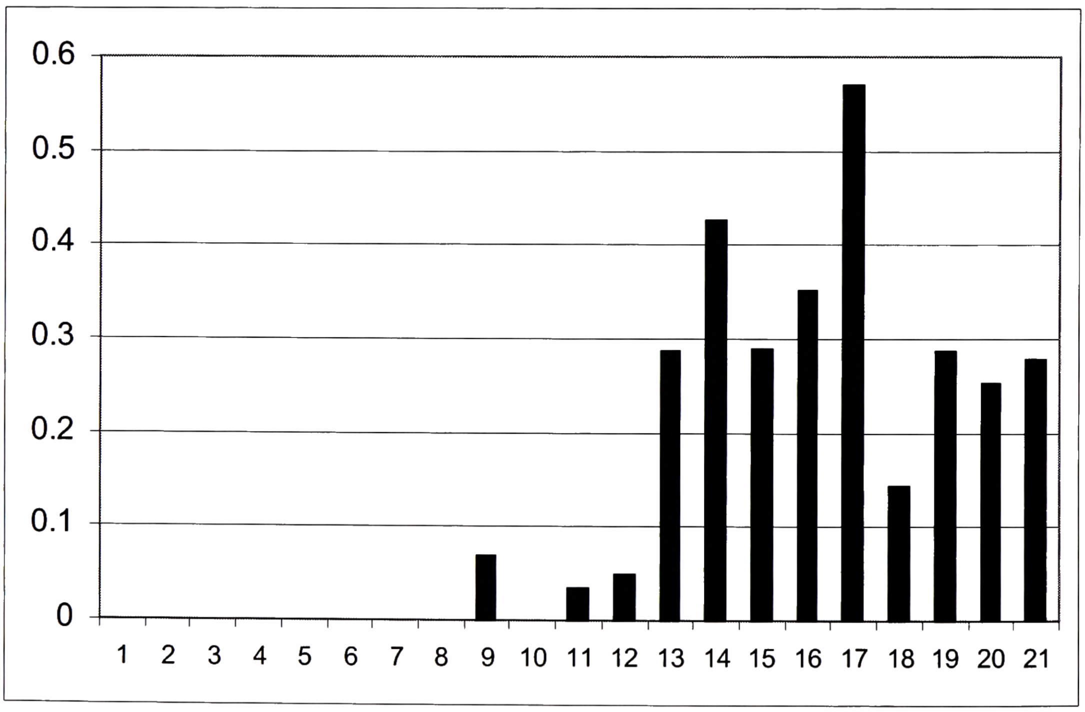


Fig. 44: Proportion of Indian sherds through the Shanga Trench 6-10 sequence (% of total assemblage by sherd count).

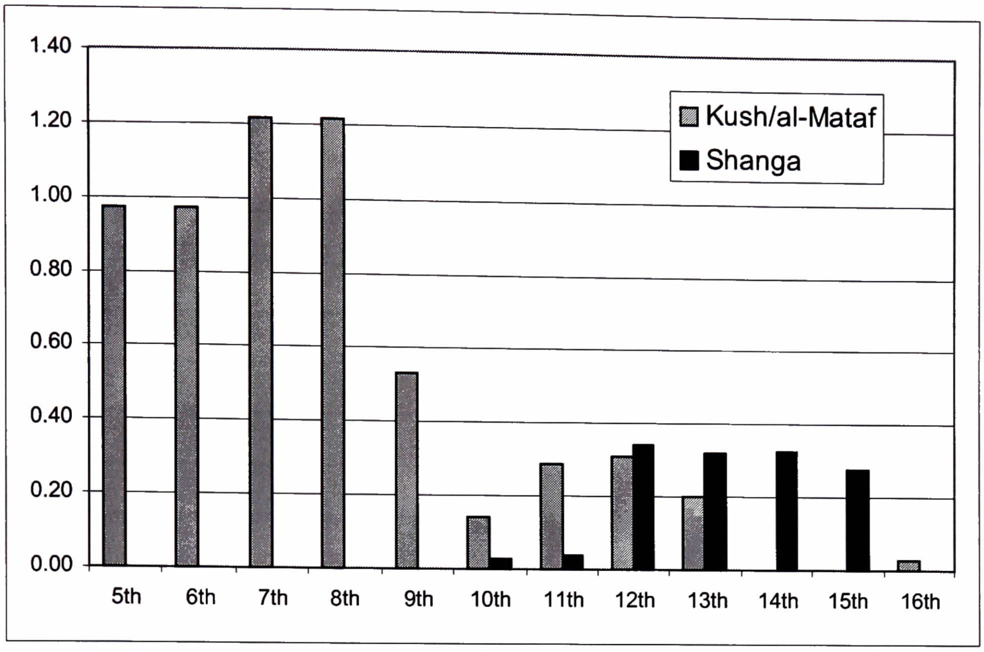


Fig. 45: Proportion of Indian pottery through the Kush/al-Mataf and Shanga sequences - the Shanga sequence does not start until the 8th century (% of total assemblage by sherd count).

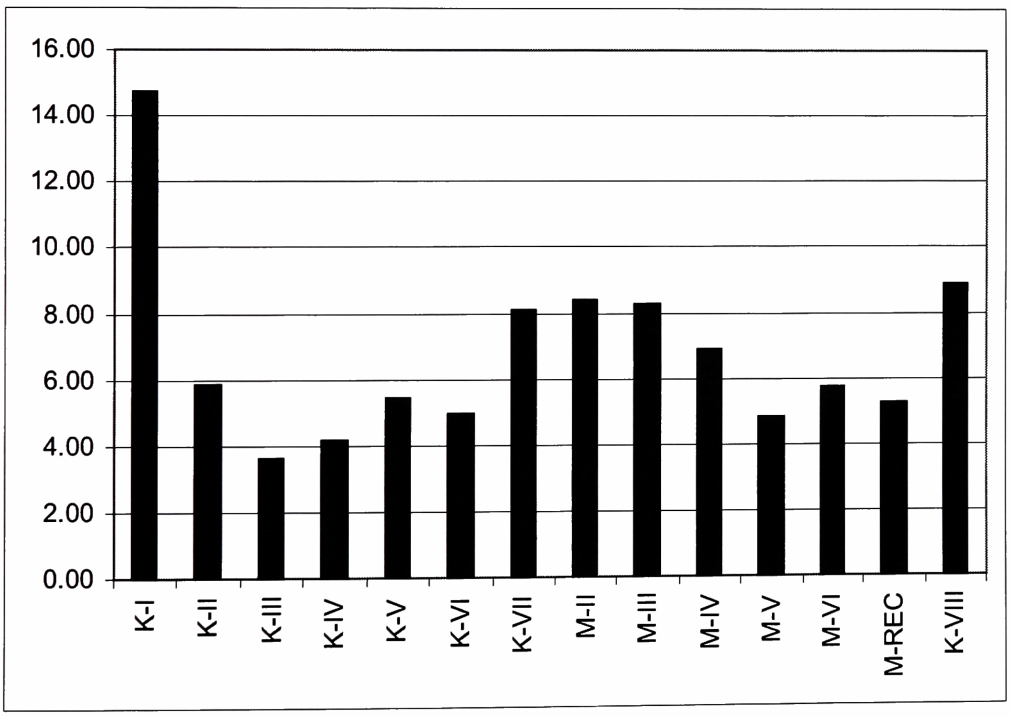


Fig. 46: Proportion of glazed sherds through Kush/al-Mataf sequences (as % of total assemblage by sherd count).

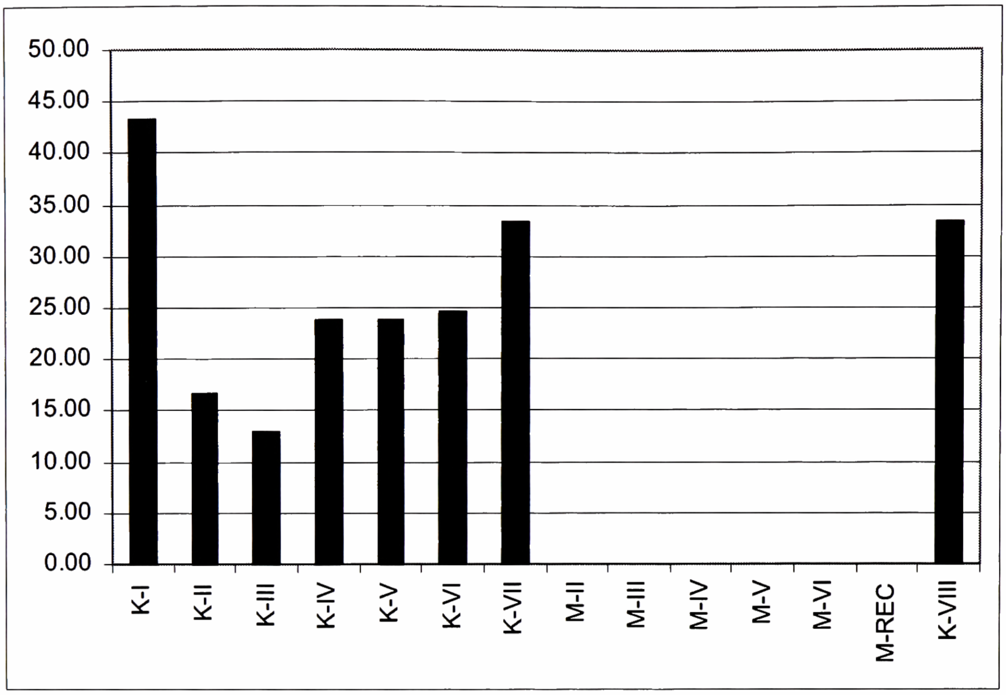


Fig. 47: Proportion of glazed sherds through the Kush sequence (as % of total by EVE).

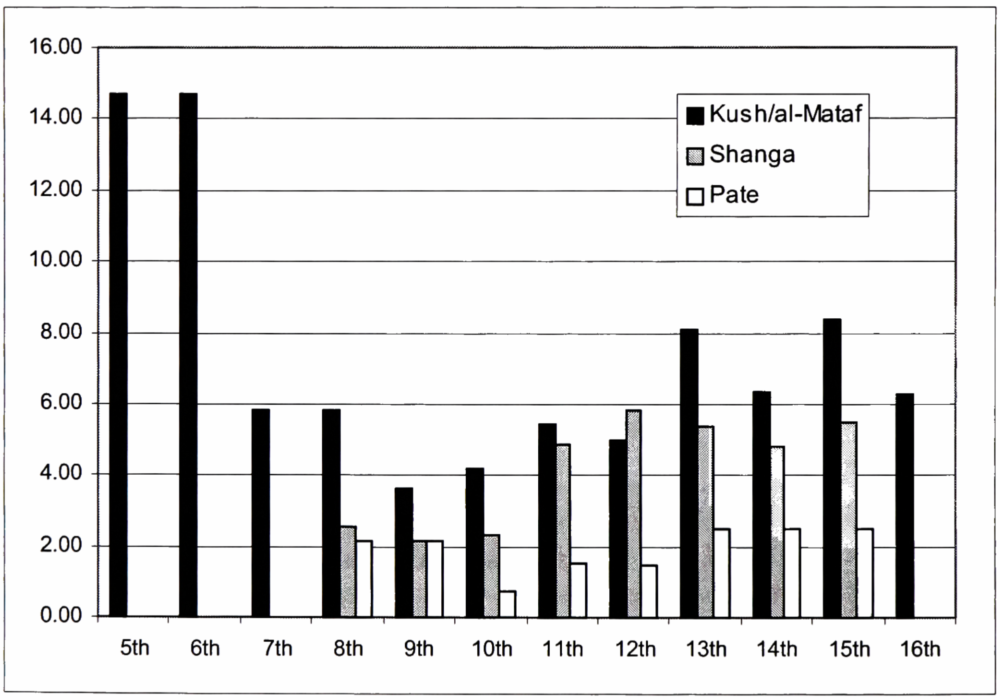


Fig. 48: Proportions of glazed pottery in the Kush/al-Mataf, Shanga, and Pate sequences by century (% of total assemblage by sherd count).

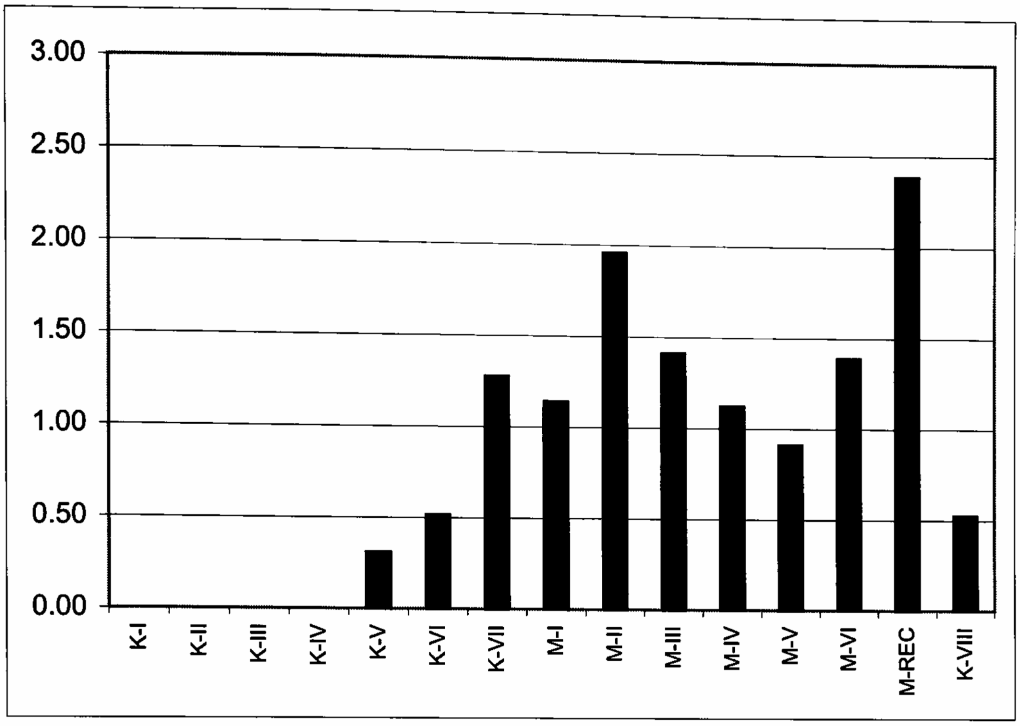


Fig. 49: Far Eastern ceramics through the Kush/al-Mataf sequences (% of total assemblage by sherd count).

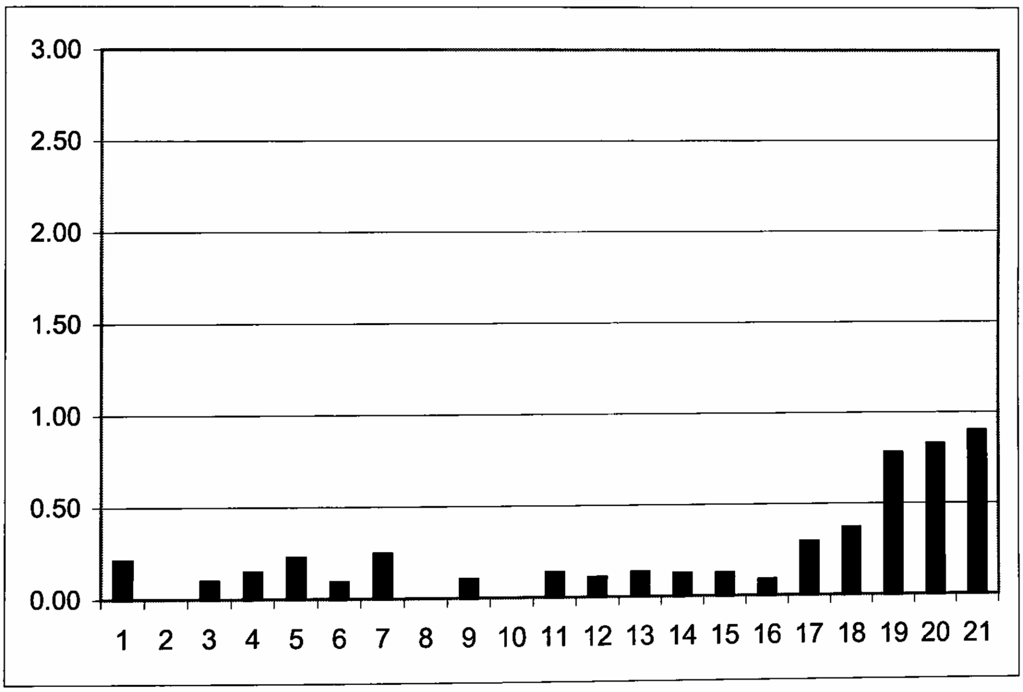


Fig. 50: Far Eastern ceramic through the Shanga sequence (% of total assemblage by sherd count) (from Horton 1996: tables 9, 12, 14).

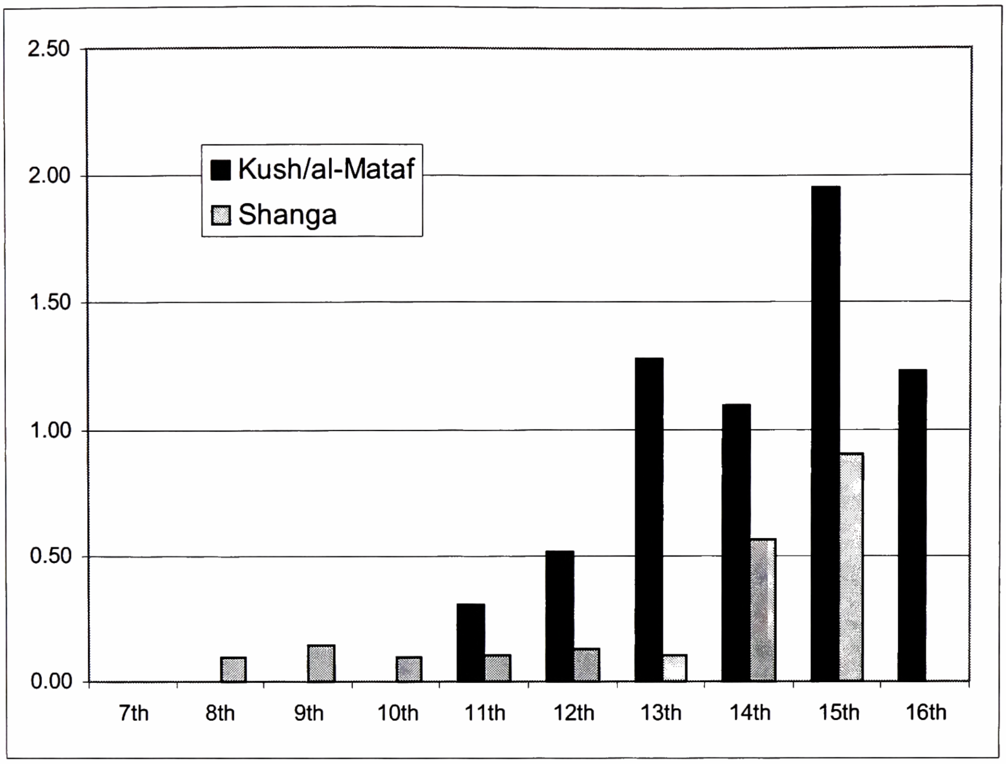


Fig. 51: Far Eastern ceramic through the Kush/al-Mataf and Shanga sequences by century (% of total assemblage by sherd count).

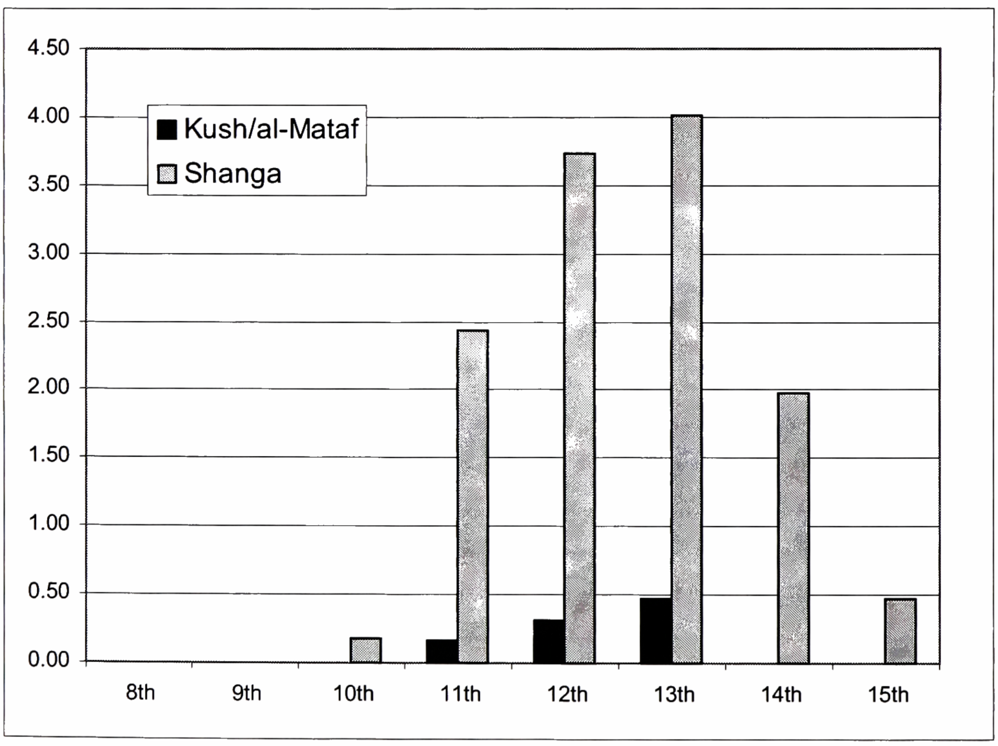


Fig. 52: Monochrome sgraffiatos through the Kush/al-Mataf and Shanga sequences (as % of total assemblage by sherd count) .

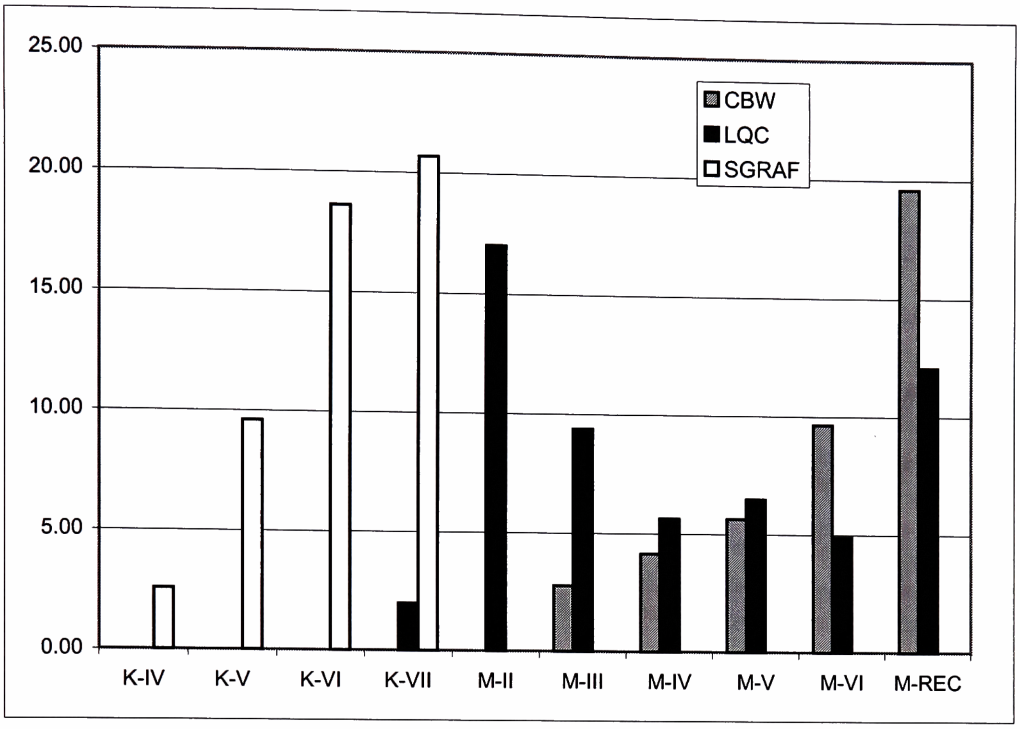


Fig. 53: Proportions of sgraffiatos (GGRAF, BGRAF, BRGRAF, DGRAF, HGRAF, MGRAF, PGRAF, YGRAF, CHAMP), Longquan Celadon (LQC) and Chinese Blue and White Porcelain (CBW) through the Kush/al-Mataf sequence (% of glazed assemblage by sherd count).

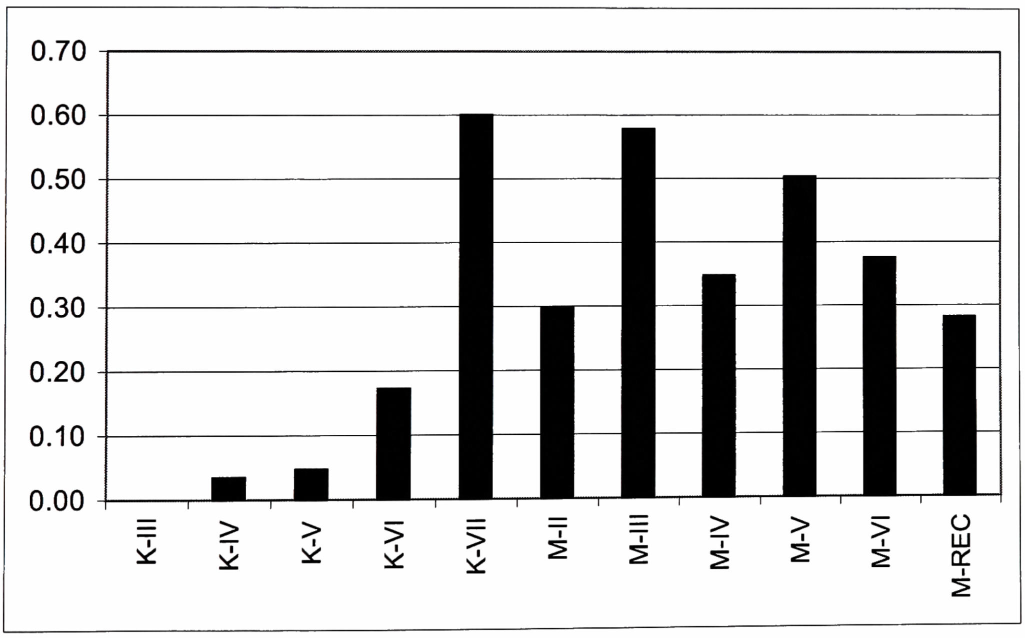


Fig. 54: Proportion of frit through the Kush/al-Mataf sequences (% of total assemblage by sherd count).

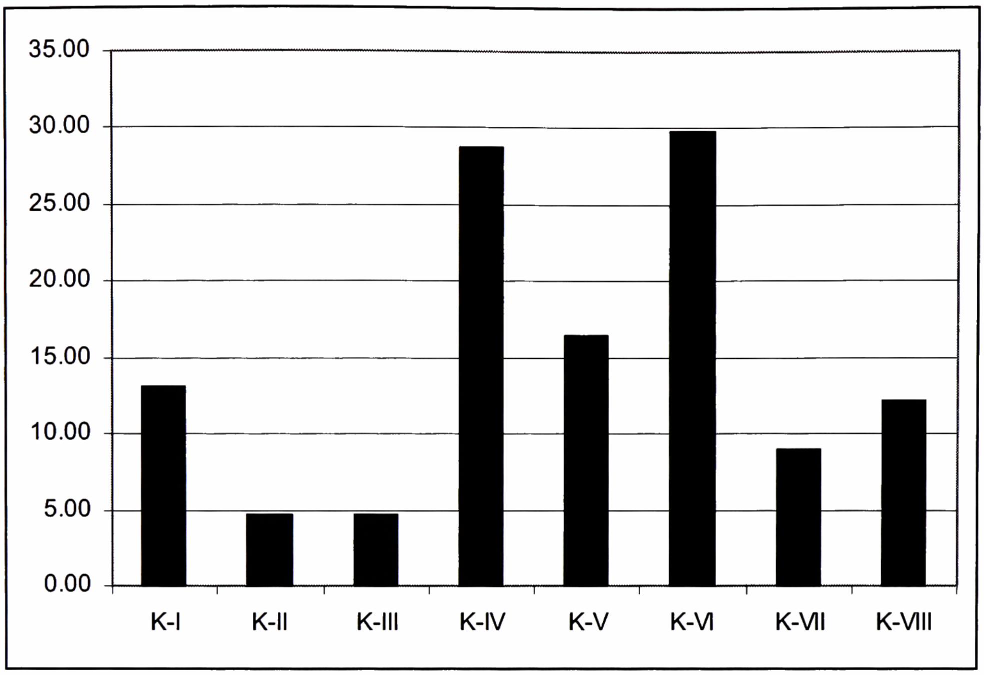


Fig. 55: Glass through the Kush sequence by fragment count as a percentage of the total pottery assemblage by sherd/fragment count.

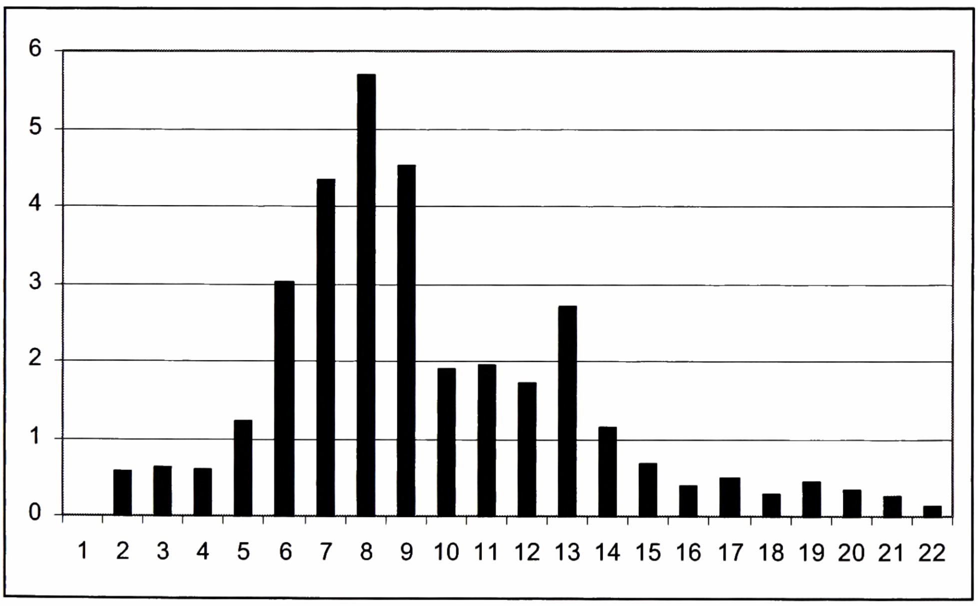


Fig. 56: Glass through the Shanga Trench 6-10 sequence as a percentage of the pottery assemblage by sherd/fragment count.

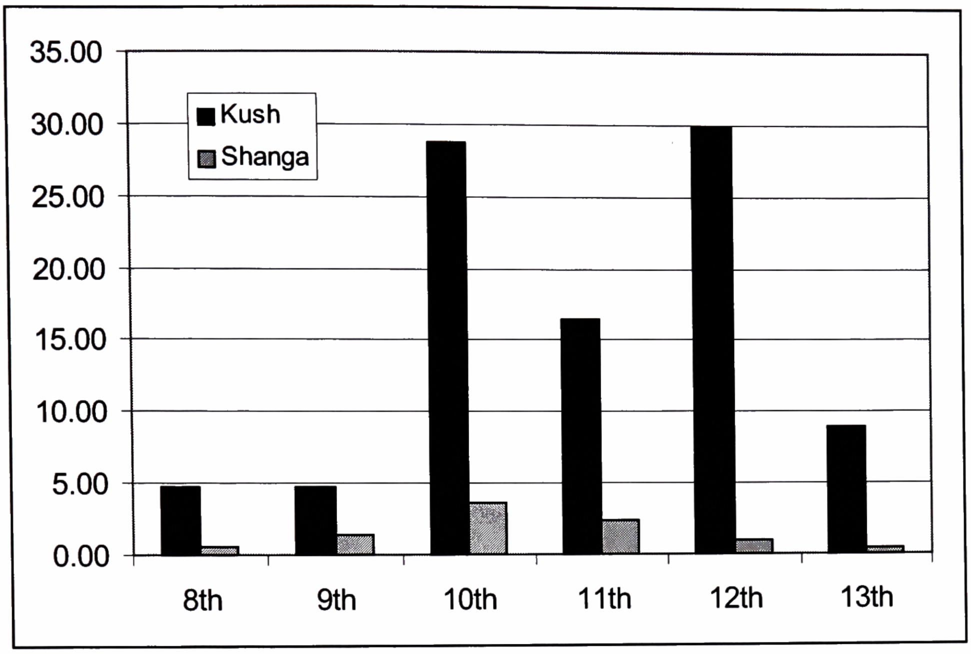
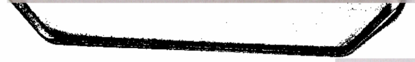


Fig. 57: Glass through the Kush and Shanga sequences by century (% of total assemblage by fragment /sherd count).



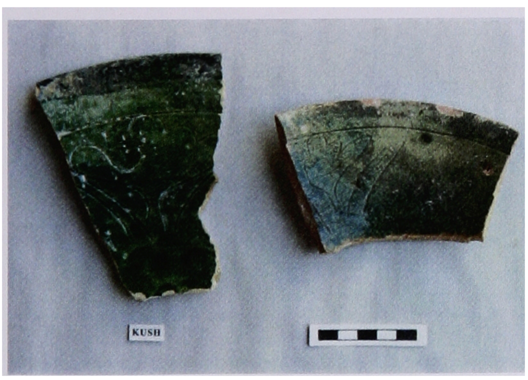
Colour Plates

CP. 1: YBTIN sherds from Kush.

CP. 2: COBALT sherds from Kush.

CP. 3: HGRAF sherds from Kush.

CP. 4: GGRAF.S sherds from Kush.

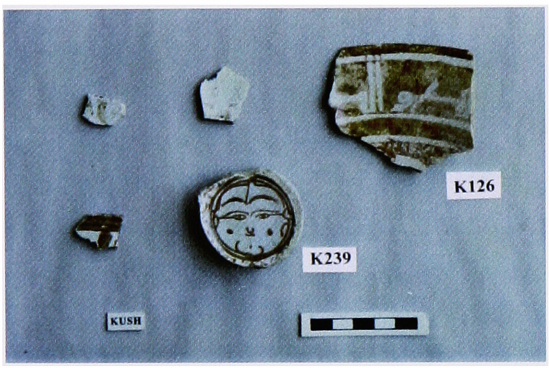


CP. 5: GGRAF.F sherds from Kush.

CP. 6: MGRAF sherds from Kush.

CP. 7: PGRAF sherds from Kush.

CP. 8: Champlevé sherds from Kush.



CP. 9: Sherds K126 and K239 of Kāshān lustre (FRIT.L) from Kush.

CP. 10: MGPAINT.1 sherds from Kush.

CP. 11: MGPAINT.2 sherds from Hulaylah.

CP. 12: YEMEN sherds from Kush.